Montana
Outdoors
Hiking
Guide Inside

Solitary peaks, entire ranges in the distance. A silver bead of high-mountain lake. A blue backdrop for wild shapes. The sun as sentinel over all.

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Photo: Steve Wint

# Montana Outdoors

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**Front Cover**
For many, hiking leads the way to a peaceful backcountry experience. The Two Medicine area of Glacier National Park offers some of the finest backcountry views in all of Montana (photo: Bill McRae).

**Back Cover**
The Tongue River snakes it way through fringes of cottonwood and willow. For those "in the know," the Tongue offers some of the most challenging smallmouth bass fishing in the state (DFWP photo: Kristi DuBois).

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IN WHAT could be loosely referred to as the pugilistic world of fish and fishermen, his reputation is one of class and character. We've all heard the "pound-for-pound" theories of his fighting qualities. We agree with them, down to our broken lines and thrown lures.

If you can believe the words of angling enthusiasts, he is tough, rambunctious, a street fighter, and a barroom brawler. Opportunistic, rowdyish, territorial, adaptable, and a native of this continent, this aggressive species reflects many of the personality traits of the millions of Americans who fish for him.

Who is this fish? You are about to meet him.

From its source on the rugged eastern slopes of the Bighorn Mountains of Wyoming, the Tongue River snakes its way down into Montana. It is dammed near the Montana-Wyoming border, forming the Tongue River Reservoir, a 3,500-acre impoundment noted for its excellent fishing.

Below the reservoir, the river—fringed with cottonwood and willow—carves its way through a landscape honed by rain and wind into a maze of color and shape.

About 30 miles downstream from the dam, where Hanging Woman Creek enters, an angler wades near the creek's mouth. Moving slowly upstream, he flips his lure about a yard above a brush pile and watches as the current swings his monofilament toward the center of the stream.

On the shore some 30 yards away, two catfish anglers are setlining and closely observing their wading counterpart. Suddenly, the wader gets a strike. Setting the hook with gusto, he hangs on as the line shears through dark water on a collision course with the practically submerged brush. Lifting the rod, the fish explodes out of the water. Finally, after a lengthy seesaw battle, the fish tires and allows itself to be netted.

The loser is a 2-pound smallmouth bass.

The winner holds it aloft, so the nearby setliners can better see his prize.

"Aw, shoot, it's just a bass," mutters one of the fishermen. "I thought he was wading for cats."

Admittedly, a fair number of eastern Montanans think "cats" and catfishing are "top shelf" and as traditional as apple pie, corn on the cob, and firecrackers on the Fourth of July. Yet, more and more eastern Montanans are now realizing that the smallmouth is also as American as the hamburger

DFWP photo: Ken Walcheck

# BRONZEBACK BRAWLER

by Ken Walcheck

and as sporting as the white-tailed deer.

That the smallmouth bass is one of our finest game fishes need not be argued. Anyone who has tangled with one of them, thrilled to its frantic runs and occasional jumps, seen its speed as it runs with the lure, and battled its strength as it bored deep and resisted the curving rod, will stoutly maintain that no finer game fish of its size exists anywhere. Here is a stubborn fighter, strong and unyielding.

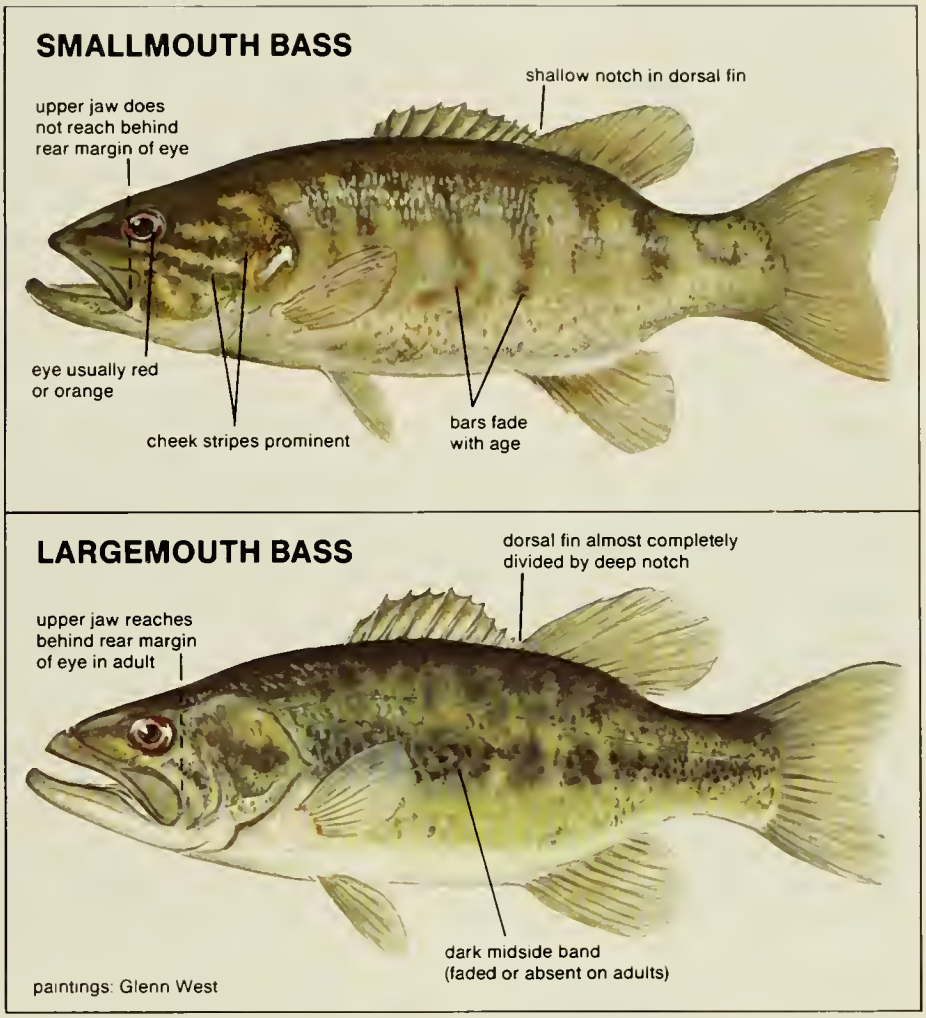
Mr. Bronzeback, a member of the sunfish family, has as many nicknames as the devil—and a lot of them for the same reasons. He's scary, lives in dark and eerie hideaways, and does things to raise the hair on our necks that logic can't explain.

Like other life history notes about the smallmouth, the story of how it received its scientific names would seem a little farfetched were it not also true. When English colonists first settled this country, they caught a fish (largemouth bass) they had never seen before. They labeled it "black trout," and one of the colonists sent a drawing of the fish to a French naturalist, Count Bernard de Lacepede, for identification. With limited information and no specimen with which to work, he named the largemouth *Labrus salmoides*, or the "troutlike wrasse."

A few years later, Lacepede examined a preserved fish—this time a smallmouth bass—sent to Paris from an unknown source in America. Unfortunately, a few of the rear rays of the dorsal fin were broken off, giving the appearance of a separate, small fin. Because of the deformed fin, the Count assumed he had not only a new species, but also a new genus, and named it *Micropterus* (small or short fin) *dolomieui* (for M. Dolomieu, a French mineralogist and friend of Lacepede, after whom the mineral dolomite was named).

Geographic distribution of the smallmouth bass was originally restricted to the fresh waters of east-central North America. Its range expanded in the mid 1800s as settlers carried it south and west. Today, the smallmouth occurs almost everywhere in the United States, and in many parts of Canada, Africa, and numerous European countries.

As reported by Dr. C. J. D. Brown in "Fishes of Montana," smallmouth bass were first introduced into Montana in 1914 when a private party purchased about 100 fingerlings from Wisconsin and planted them in Horseshoe Lake near Bigfork. Other early plants in various parts of the state were undoubtedly made, but no valid confirmation exists. Only in recent years have substantial documented plants been made in Montana. Currently, this bold battler resides in numerous areas of Montana, with eastern Montana providing the most fishing opportunities (see the list of fishing waters).


SMALLMOUTH BASS
shallow notch in dorsal fin
upper jaw does not reach behind rear margin of eye
eye usually red or orange
cheek stripes prominent
bars fade with age
LARGEMOUTH BASS
dorsal fin almost completely divided by deep notch
upper jaw reaches behind rear margin of eye in adult
dark midside band (faded or absent on adults)
paintings: Glenn West

Some anglers have trouble distinguishing between largemouth and smallmouth bass. Anatomically, here's how the two differ: First, the largemouth's upper jaw reaches behind the rear margin of the eye, while the smallmouth's doesn't; second, the spiny frontal portion of the largemouth's dorsal fin is almost completely separated by a deep notch from the rear, soft portion, while on the smallmouth the separation is only slightly notched.

Although a smallmouth's color varies with size, condition, and habitat, it is typically camouflaged like a jungle guerrilla fighter—from dark brown to brassy green on the back, with lighter flanks and dark vertical bars that fade with age. Dark cheek stripes radiate backward from the eyes, which are splashed with red. Largemouths, in contrast, are black to greenish and have a dark horizontal band from head to tail.

The two species also prefer different kinds of habitat. Largemouths thrive in weedy areas, including small ponds where the water may be murky or even turbid. You will find them under lily pads, next to stumps, and in dense weed beds. Smallmouths exhibit little tolerance for siltation and turbidity and prefer faster moving streams where the clear water rushes over rocky or sandy bottoms and swirls around such cover as undercut banks, boulders, or logs. They feed in deep, clear pools and at the foot of riffles. In lakes, smallmouths prefer rocky shorelines, sandy or pebbly stretches, or gravel bars running out into deeper water. Although classified as a cool water species, temperatures in most mountain streams and lakes are too cold for adequate reproduction and growth.

Smallmouths spawn over a period of

Fishing for smallmouth bass on the Tongue River (DFWP photo: Kristi DuBois)

# SMALLMOUTH BASS WATERS IN MONTANA

**Northwestern Montana**

Loon and Horseshoe Lakes—Lake County
Loon and Little Loon Lakes—Lincoln County
Noxon Reservoir (planted in summer 1982)—Sanders County

**North Central Montana**

Warm Springs Creek—Fergus County

**South Central Montana**

Musselshell River—Roundup, Melstone, and downstream reach of river

**Northeastern Montana**

Fort Peck Reservoir—Hell Creek area; vicinity of Fort Peck Dam; mouth of Musselshell River
Milk River—just above and below Vandalia Dam (between Glasgow and Hinsdale)
Poplar River—15 miles south of Scobey to mouth of river; also lower 10 miles of the West Fork

**Southeastern Montana**

Tongue River—Birney, and downstream stretch to Ashland; below SH diversion dam; 12-mile diversion dam, and downstream to the Yellowstone River
Baker Lake—Fallon County
Burnside and Sagebrush reservoirs—Powder River County
Cottontail, Homestead, and South Fork reservoirs; Grant's Pond—Prairie County
Hagloff's, Isaac's, Stanton, and Guesanburn reservoirs; McKeever and Saylor ponds—Garfield County
Byrne Reservoir—Carter County
Penrod and Shamel reservoirs; Mallard Pond—Custer County
Toepke Reservoir—Dawson County
Far West, Hansen's, Lee, and Poker Jim reservoirs; Red Rock Lake—Rosebud County

six to 10 days in late May to late June. Spawning begins when water temperatures reach 55° to 60°F. The male builds a nest by fanning out a gravelly area from one to six feet in diameter. After nest building, there is considerable pre-spawning activity including display, rubbing, and nipping. The actual deposit and fertilization of eggs takes about five seconds, but the acts are repeated for about two hours. After spawning, the female leaves the nest and may spawn in another nest with another male. The male guards the nest and fans the eggs. After hatching, smallmouth fry (young fish, newly hatched, after the yolk has been used up and active feeding begins) drop down into the gravel where they stay for about six days. Then they work their way out of the gravel and "swarm" over the nest; soon, in five to seven days, they begin to disperse. Until they do so, the male continues to guard them.

According to one authority, about 40% of the nests are failures, although approximately 2,000 fry result from successful nests. Even if the nest is successful, death lurks in many forms: It may pounce suddenly with open jaws from under a submerged log, or creep in slowly and agonizingly as a parasitic tapeworm or an insidious fungus infection of the gills, or show itself in sudden shifts in temperature or low water levels.

Chris Clancy, a department fisheries biologist, completed one of the most comprehensive studies of smallmouth bass in Montana by surveying populations in the Tongue River in the Ashland-Birney area. Clancy collected information on bass habitat and movements through electrofishing, seining, snorkeling, and attaching bobbers to captured fish. Some of his important findings included:

- Despite the fact that most studies conclude that smallmouths don't move much, Tongue River smallmouths went as far as 50 miles in their spring and fall movements to spawning and rearing sites.
- Smallmouth bass are the most prevalent game fish in the Birney-Ashland area.
- Maintenance of adequate flows in the Tongue River are essential for spawning, fish passage, rearing, invertebrate production, and winter survival.
- Strip mining the area adjacent to the Tongue River between Birney and Ashland could harm the fishery. Mining operations scheduled for the immediate area and related energy developments are presently on hold because of the country's "soft" coal market.

Typical of fish, the female of the species grows larger than the male. Undoubtedly, the 11-pound, 15-ounce *Field & Stream* angler smallmouth record caught in Dale Hollow Lake, Ky., in 1955 was, as seasoned bass fishermen say, "a big mama." The smallmouth fishing record for Montana stands at 4 pounds, 11½ ounces, and was caught by Bob Higson in 1975 in Horseshoe Lake.

The strike of a smallmouth is unique among fresh water game fish. Rarely does it sip at your lure like a feeding trout, or clamp down like a walleye. Most often, Mr. Bronzeback acts like a stick of dynamite with an explosive display all his own. When the spring sauger run is on in the lower reach of the Tongue River near Miles City, I know immediately when I have a smallmouth on because he will always race upstream before breaking water.

Smallmouth bass are usually taken still-fishing with worms, minnows, crayfish, or frogs as bait; by spin casting live bait or artificial lures, or by fly-fishing with wet and dry flies or poppers. The flesh is white, flaky, and delicious when prepared in a variety of ways.

If you were searching for smallmouth country in Montana, the Tongue River would be a good bet. The Birney-Ashland area and SH and 12-Mile diversion dams would be good choices. If you visit any of these areas, chances are good you will run into Howard Letke, a Miles City angler, who doggedly pursues smallmouth.

"You can't imagine all the good bass fishing that goes begging due to lack of interest," says Letke. No argument there. The department runs a "fisherman's log" program where cooperators maintain a fishing diary and loan it to the department for a short time each year so the information can be recorded. The logs show smallmouth bass comprise only one-fourth of one percent of the total statewide catch.

"I prefer wading," explains Letke. "You have better line control and can approach the fish better."

The creature Letke seeks, he says, normally holds into the current, facing upstream. The logical strategy, then, is to deploy from downstream, behind the fish. Then, notes Letke, disturbances such as roiled water or dislodged debris won't pass in front of the bass and alert it to the intrusion.

"Likely bass refuges are places with fallen trees, old logs, stumps or drift piles because they provide shade and protection. Like catfish, bass are fond of 'structure,'" he adds.

"And, oh yes, once you take a bass from a certain hole, go back to that same spot a week or so later. You'll probably latch onto another, 'cause whatever attracted one bass will eventually lure some relatives."

Letke likes to wade up to a brush pile and then lace a cast which drops his purple Mister Twister lure several feet past the debris. "When I get a strike, I stick him hard. When a 2-pound bass uses the current to his advantage, its like the pulling force of one of the Budweiser Clydesdales."

It was probably a bass fisherman who said, "the harder I work, the luckier I get." But bass fishing isn't all hard work. It's learning a few basic essentials that have been proved time and time again by anglers who like to catch fish and do what it takes to make that happen.

Howard Letke and others like him aren't that much smarter than a bass. They just try to think more like a fish than a lot of us. ■

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# THE UNKINDEST BITE OF ALL

by G. Wesley Burnett and Lisa Mathis Butler

RABIES. A disease of the central nervous system, the word alone causes fear. Often, a vicious bite is the means of exposure. The incubation time is of uncertain length. Painful anti-rabies vaccines, with sometimes serious and disabling side effects, are administered. If these fail and symptoms develop, an unimaginably horrible death is certain.

Yet in man, rabies is mercifully rare. In North America and western Europe, lightning kills more frequently. Even in the poorest nations, rabies' annual toll of 1.6 lives per 100,000 people is paltry compared with the havoc wrought by gastrointestinal infections. But rabies is at least occasionally present in any ecological system that includes mammals.

The rabies culprit is a bullet-shaped virus, one of 60 or so members of the rhabdovirus group. It is small, so small that 40 virus particles could fit across a human red blood cell. Like all viruses, this one is incapable of independent, nonparasitic life. After entering a cell, the virus literally highjacks it, directing the cell's functions to creation of new virus particles rather than healthy cell replacement material.

Nerve cells are a chief item on the menu of the rabies virus. Entering nerve cells at the site of a wound, the virus travels to the spinal cord and brain. From the brain, the virus reinvades the nervous system, eventually affecting every tissue and cell in the body. Nerve cells carry the virus to salivary glands and the saliva where millions of particles await transmission to a new host, normally (although not always) through a bite.

The lick of an infected animal on an open wound or a mucous membrane also may lead to infection. In fact, contact with any gland, mucous membrane, or secretion of an infected animal could result in transmission of the disease. For example, in 1956 and 1959, two cave explorers near Uvalde, Tex., probably contracted rabies by inhaling suspended particles from bat urine and saliva. Any contact with an animal having—or suspected of having—rabies must be considered exposure and treated as such.

Rabies lacks symptoms until the virus invades the central nervous system. Then, its progress is swift and irreversible. Incubation (the period between exposure and the beginning of symptoms) is inconsistent and ranges between six days and, dubiously, several years. For exposed persons, incubation is a time of desperate worry and often produces false symptoms of hysterical pseudorabies.

The virus' journey from where it enters the body to the central nervous system explains the variation in incubation periods. The more savage the attack, involving greater tissue damage and greater exposure of nerve cells, and the closer the wound to the central nervous system, the shorter the incubation period. Children, more often attacked in the head and face, are particularly prone to short incubation periods because the head has abundant nerve cells, it is close to the central nervous system, and children's young tissue is more easily damaged.

Human rabies has two forms: (1) paralytic or dumb rabies, and (2) hydrophobia or furious rabies. In paralytic rabies, the spinal cord and base of the brain is infected and the disease's progress is slower and less stormy. The "madness" associated with furious rabies is absent. Globally, possibly one-fifth of all human rabies cases are paralytic, and bats are almost always the source of infection.

Classical rabies is "furious," and often includes hydrophobia as a symptom. Initially, rabies resembles the common cold or influenza and is not easily diagnosed. Pain often is felt at the site of the wound. Infection quickly proceeds to parts of the brain calibrating blood vessels and controlling breathing, heart activity, muscular activity in the tongue and throat, sweating, temperature, salivation, and emotion, aggression, and sexuality.

Hydrophobia, or "fear of water," is a complex symptom apparently unique to man. Initially, liquids cannot be swallowed but the symptom progresses to the point that the mere sound of running water produces extreme terror and violent reflex reactions in the tongue, throat, esophagus, and diaphragm. Uncontrollable thirst and agonizing throat and larynx pain are also symptoms.

Infection of those portions of the brain which control emotions leads to a complete personality change and "madness." Experiencing rational periods until the end, the patient becomes depressed, angry, aggressive, and may possess excessive sexual energy. Without intensive care, death usually occurs within two to four days and certainly within a week of the onset of the symptoms. With intensive care, life may be prolonged another week or more. Historically, both suicide and mercy killing have been common.

Theoretically, rabies can infect and be transmitted by any warm-blooded animal, including birds. Mammals vary considerably in their susceptibility. Man and livestock are "incidental hosts" to the rabies virus — the virus is uncommon and generally does not

spread beyond the infected individual. Several hundred cases of such "incidental" rabies may occur among Montana's livestock in a single year. The disease is common to, spread by, and consequently maintained among certain species of wildlife, said to be "maintenance hosts." Naturally occurring rabies in wildlife is often called "sylvan rabies."

Even in common maintenance hosts, the degree of rabies infection varies considerably. Marsupials are practically immune, although in North America rabid opossums have occasionally been diagnosed. Bats are a major source of rabies in man and livestock in Latin America, where the vampire bat causes millions of dollars of damage to livestock each year. The bat was not recognized as an important rabies carrier in North America until 1953. It is now considered as a major maintenance host in both the United States and Canada.

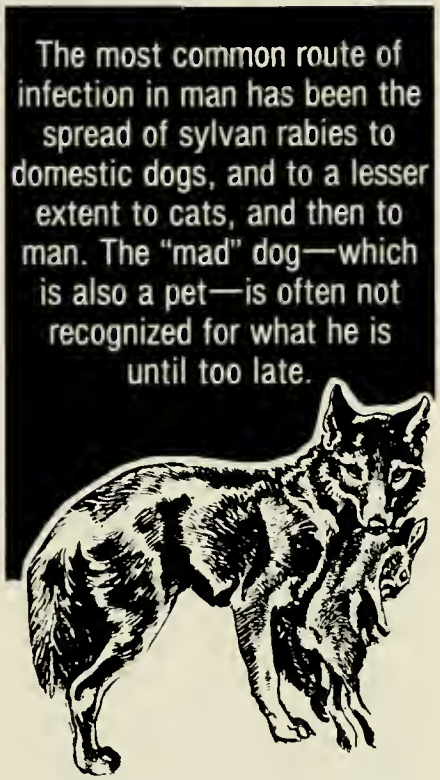
Hares, rabbits, mice, rats, muskrats, and squirrels have all been found infected with rabies, but their status as worldwide maintenance hosts is uncertain. In North America, it is fairly certain that although rodents become infected, they do not harbor an independent reservoir of rabies virus.

Historically, bears and wolves have been important transmitters of rabies. Humans treated for exposure through bears regularly exceeds 150 cases per year worldwide. Wolves are among the most susceptible species and, in many parts of the world, often still attack man. It is possible that the wolf's reputation for ferocity, its bad press in folklore and fairy tale, and its tenuous grasp on existence throughout much of its range can be blamed on its proclivity for rabies.

In Europe, foxes and badgers cause most sylvan rabies problems and illustrate the differences in susceptibility among species. An epidemic among badgers would rarely infect more than 10% of the population, while 80% of the fox population might be infected.

The principal maintenance hosts are foxes and skunks in Canada and the United States, and raccoons in the United States. Bats cause problems in both countries, as do wolves in Canada and coyotes in this country.

A look at rabies in the striped skunk can be helpful, particularly for Montana sportsmen. The striped skunk commands respect and has few enemies, largely because of its odoriferous form of chemical self-defense. A regular on the menu of the great horned owl, the skunk falls victim to other predators only when times are lean. Self-confident, nocturnal, and an opportunistic feeder, the skunk's needs can often be met near man — under the back porch, for example.


The most common route of infection in man has been the spread of sylvan rabies to domestic dogs, and to a lesser extent to cats, and then to man. The "mad" dog—which is also a pet—is often not recognized for what he is until too late.

Rabies in skunks is cyclical, and no other species is known to infect skunks. Therefore, rabies in skunks is thought to be endemic (regularly occurring) and transmission is assumed to be from one skunk to another. Epidemics of rabies occur when population densities are high, and there is frequent contact among individuals. The epidemic continues until enough animals die to reduce population densities, thus also reducing contact among individuals.

The rabid skunk is a strange animal. The period between onset of symptoms and death may be as long as 18 days. During this time, the skunk foresakes its nocturnal habits and is less trigger-happy with its self-defense mechanism. Its wandering is broken by rest, often in open fields in daylight, where it may nip curious livestock on the nose. Because they are unusually curious, horses often receive the snap of a mad skunk. The skunk may lose its respect for man, wander through farmyards, attack dogs, or respond affectionately, but unpredictably, to the friendly overtures of children amazed to find "Flower" beside the creek. Just like in the movies — only deadly.

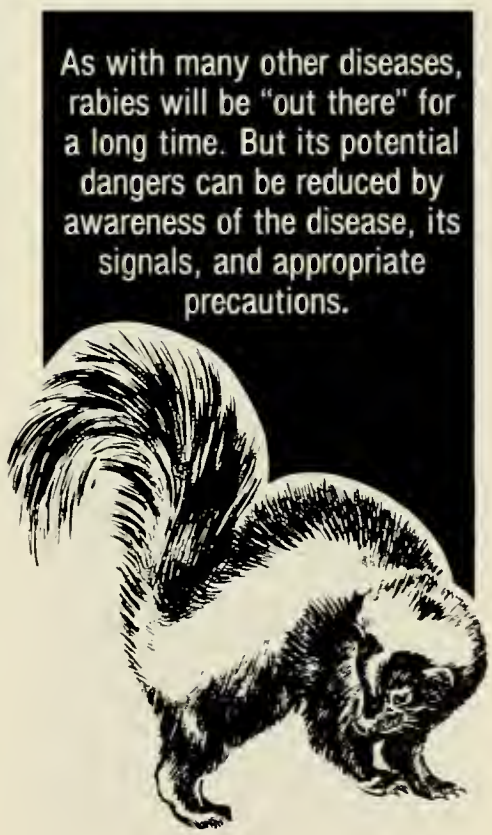
The first rabid skunk in Montana was diagnosed in Fallon County on April 21, 1964. However, Fish and Game and public health officials had anticipated rabies in Montana skunks from infected populations in North and South Dakota and Saskatchewan and had instituted skunk control programs in 1951.

Widespread sylvan rabies in a wildlife population is difficult, if not impossible, to control. Historically, the cure has been outright slaughter of the offending species, and probably several inoffensive ones as well. Such a radical approach is unnecessary and unacceptable today.

Selective vaccination and oral vaccination in salt licks and baits have been attempted, but they are expensive and unproved. Except where extremely rare or valuable animals are at issue, other methods are probably better.

Reducing population densities in species like foxes and skunks remains the usual form of control; it is accomplished through wildlife management, including hunting and trapping, and maintenance of balances between prey and predators.

Selective poisoning, a last resort effort directed at specific habitats where diseased animals have been diagnosed, has been effective, particularly on skunks. However, poisoning is expensive, potentially dangerous to other wildlife, man, and livestock, and if indiscriminately or carelessly applied, may actually accelerate the spread of rabies

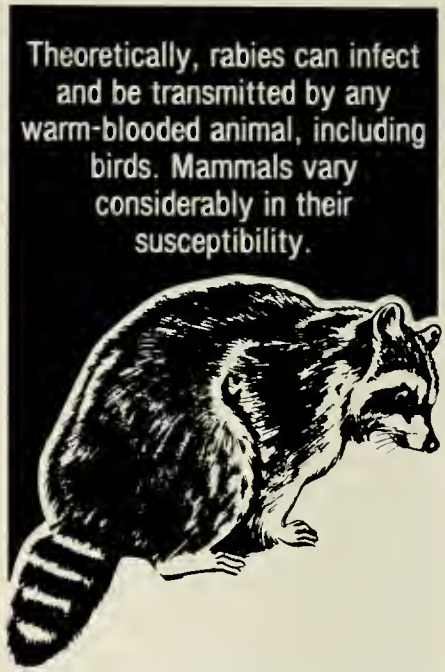

As with many other diseases, rabies will be "out there" for a long time. But its potential dangers can be reduced by awareness of the disease, its signals, and appropriate precautions.

by increasing the area available to infected animals.

The most common route of infection in man has been the spread of sylvan rabies to domestic dogs, and to a lesser extent to cats, and then to man. The "mad" dog — which is also a pet — is often not recognized for what he is until too late. Rover has a bad day or two: His appetite and temperament change, and he has a strange look in his eyes. Probably just a cold. Edgy, he nips a child, and an hour later disappears from the garage. He returns in five days or so, dazed, thin, and covered with mud and blood, or he is captured 25 miles away and is obviously "mad." Melancholy, anxiety, extreme affection, and unpredictable snappishness, rejecting food or "wolfing" food (including coal, wood, metal, and stones) are followed by paralysis, particularly in the lower jaw, a protruding tongue, and copious salivation. Progress from the first nip or demonstration of symptoms is rapid, so that isolation and observation for five days will generally confirm rabies' existence.

Cats, possibly because they have less contact with hosts and are more cautious and agile, contract rabies less frequently. But they are susceptible and in many ways more dangerous than dogs.

While dogs and cats have been the most important transmitters of rabies to man, the possibility of direct infection from sylvan sources in this country concerns wildlife managers and public health officials. Pre-exposure vaccination of dogs and cats is effective and widespread. However, many unvaccinated maintenance hosts find suburban America suited to their needs. The odor of freshly killed skunks is familiar in suburban areas throughout North America. The distinctive footprints of the raccoon mark sandbars of creeks that border many subdivisions. Coyotes may be seen on the fringes (and late at night in the downtowns) of many western cities. Epidemics in any of these species could pose a serious health problem, particularly among urbanites unaccustomed to contending with wildlife.


Theoretically, rabies can infect and be transmitted by any warm-blooded animal, including birds. Mammals vary considerably in their susceptibility.

Regard any unprovoked contact with a wild mammal as potential exposure to rabies. Aggressive animals or those that seem to desire affection are especially suspect.

Beginning with the work of Louis Pasteur, research leading to isolation of the rabies virus, and development of pre- and postexposure vaccines and serums has demonstrated the power of laboratory science. Unfortunately, more difficult and expensive field investigations, leading to understanding the ecology of sylvan rabies and its control, have not matched laboratory achievements. Many questions remain. What is the relationship of rabies to the life histories (too often themselves imperfectly understood) of individual species? How does rabies survive in a species between epidemics? Do some individuals survive rabies and then become "carriers?" Are some individuals naturally immune and, once exposed, do they act as carriers? Is there an as yet undiscovered natural reservoir of rabies which does not harm infected individuals? Further advances in controlling sylvan rabies depend on answers derived from additional field research.

Rabies, a disease causing fear because of its unpredictability, physical and psychological pain, and death from convulsive seizure, heart failure, muscle paralysis, or respiratory failure, should concern anyone who might be exposed. As with many other diseases, rabies will be "out there" for a long time. But its potential dangers can be reduced by awareness of the disease, its signals, and appropriate precautions. ■

## Field Precautions

Regard any unprovoked contact with a wild mammal as potential exposure to rabies. Avoid close contact with *any* wild animal, particularly if the animal is behaving strangely. Aggressive animals—those attacking man or dogs—or friendly animals—those that approach or seem to desire affection from man—are especially suspect. Children, in particular, must be warned to avoid wild animals and to tell an adult about any bites or licks.

If you are bitten, the Division of Public Information of the World Health Organization recommends:

- Wash the wound with soap and water as soon as possible.
- If soap and water are not available, any liquid will do, particularly a carbonated beverage, alcohol, or whiskey.
- Apply a disinfectant such as alcohol or tincture of iodine.
- Seek the nearest possible competent medical assistance to determine the advisability of beginning postexposure anti-rabies vaccinations.

If possible, obtain the offending animal, dead or alive. Do this only when risk of exposure is not increased, either to the person bitten or other members of the party. Don't spend excessive time on this, and take care that the animal brought in is, in fact, the same animal that bit the victim. Don't assume that the first skunk driven from the bush is the same animal that attacked 30 minutes ago. Unfortunately, when dealing with wildlife, it is seldom practical to obtain that animal.

Persons with a high risk of exposure—trappers, guides, outfitters, and cavers, among others—should consider taking the series of pre-exposure vaccinations. Pack animals and livestock, particularly horses, associated with high-risk professions or in epidemic areas should also receive pre-exposure vaccinations.

Of course, dogs and cats must receive regular pre-exposure vaccination. It is the law, and it is good sportsmanship.

# The Catchall

## Jensen Begins Commission Term

• *When the governor appoints a new Fish and Game Commissioner, we usually run an article about him, where he is from, and what he does. Gov. Ted Schwinden recently appointed Robert A. Jensen, sheriff of McCone County, to the Commission to replace Paul Tihista, Glasgow, whose term expired. Jensen's term will run until January 1987. But instead of telling you about Bob Jensen, we'd like to let him introduce himself. The following are his own words about how he perceives the challenges of the months and years ahead—and we think you'll agree they say a great deal about Bob, his concern for Montana, and its wildlife resource.*—Ed.

As in beginning all new adventures, I start a term as Fish and Game Commissioner full of hope and courage that I can be of some value to the people I serve and to the great state in which I live. As the realism of the position comes to me and I tend to bog down in the everyday battle in futility that so often becomes the fate of man, I hope I can remain naive enough to stand and fight for some of the ideals I now have for the people of Montana, and the land, water, and wildlife as well.

I am enough of a realist to know that as the very nature of progress changes the destiny of man and Montana, we must accept and roll with the punches if we are to survive. But I also believe that as land use changes occur, we can ill afford to do unnecessary damage to Montana's many valuable resources.

As a sportsman and an American, I also recognize that private property is a right of free society and necessary for the many ideals we cherish so dearly. I deem it very necessary that we as a people not only preserve the wildlife, but do everything we can to protect and nourish the goodwill that has been so freely given by the many landowners who also struggle to survive in a changing time. We must not infringe on the hospitality that has been extended to us or it may become every bit as scarce as the proverbial ice in a very hot place. As times change, we must strive harder to protect this necessary part of Montana, for it, like nature itself, is a part of our heritage.

I believe we must realize that inflation not only affects the necessities of life but also the pleasures, and that we may have to forego some pleasures and set priorities as costs become higher. But if we weigh our heritage in natural resources and wildlife, it becomes of the utmost importance. For, unlike manufactured goods, our natural resources cannot be easily replaced or re-ordered.

There are few pleasures that can be enjoyed from birth to death and without much conscious effort. The blind may enjoy the cry of the wild geese, the deaf the sight of these majestic birds, and even the blind and deaf may enjoy the very smell of nature that gives us so much pleasure. It is a pleasure that can

Bob Jensen (DFWP photo: Tom Warren)

be enjoyed alone, or with others. The enjoyment can be passive or participatory.

I believe we do not struggle only to protect the wildlife for the hunter and fisherman, but for all people. The early morning song of a meadowlark to an invalid grandmother may have as much value as the bugling of a mighty bull elk to the hunter.

I believe we must strive to maintain a balance so the resource can keep in step with both the people and progress of our ever-changing times. We must try hard to listen and protect the ideas and interests of everyone. But decisions must be based on the preservation of the resources so that Montana's natural heritage can be enjoyed by future generations.

Management of a resource is much like ice skating. On a level pond, it is enjoyable, and with much maneuvering, it can be accomplished. But if one goes downhill, it happens fast and is extremely dangerous. Once at the bottom, it is nigh onto impossible to skate back up the hill to level going.

I believe we must maintain a level of success in managing the wildlife resource, so that it is continuous for all time. If it isn't good enough for all of us, in the end it will not be good enough for any of us.—*Robert A. Jensen*

### Lake Koocanusa Kokanee

According to Kalispell-based fisheries biologist Joe Huston, kokanee first appeared in Lake Koocanusa, the 25,000-acre reservoir behind Libby Dam, during fall 1978. Few were caught by anglers, but those that were checked averaged 18 to 20 inches long. Kokanee were observed spawning in British Columbia's Bull River drainage, 33 miles north of the border, in 1978, 1979, and 1980. Despite these observations, kokanee largely disappeared from the angler's creel and the state's sampling until 1981.

In February 1981, about 100, 5-inch, 1-year-old kokanee were observed immediately below Libby Dam. Many were dead, others bruised, and they had apparently come through the power generating system. During May, June, and July of 1981, kokanee in the angler harvest averaged 8 to 9 inches long and accounted for about 8% of the creel. By late fall of 1981, kokanee ran 11 to 13 inches long, and made up 50% of the Lake Koocanusa catch.

In 1982, the kokanee catch was good throughout the fishing season, peaking in August with fish in the 16-inch range weighing an average of nearly 2 pounds.

Under contract with the Corps of Engineers, the Department of Fish, Wildlife and Parks operates a west-slope cutthroat hatchery near Eureka. Since 1980, over 1 million cutthroat have been stocked in and around Lake Koocanusa. State management calls for assessment of this program before considering any other game fish species.

So where did the kokanee come from? British Columbia officials say they have never knowingly stocked the reservoir

or made plants into any of its tributaries. One possibility would be natural drift downstream from kokanee-stocked lakes in the Tobacco River drainage east of Eureka. A second possibility would be natural or accidental leakage from the Canadian salmon hatchery 14 miles north of the border.

Last fall, at least 20,000 kokanee from Lake Koocanusa attempted to spawn. The spawners ranged between 13 and 21 inches long, with an 18-inch average. They began entering the streams in October. Almost all of them were 2-plus years old, approaching their third spring; most kokanee in the Flathead River drainage spawn when they are 3-plus years old.

In November, over 500 spawners were observed in the Tobacco River. About 4,000 spawners were counted in Norbury Creek, B.C., 35 miles north of the border, and 15,000 were seen in Kokomun Creek near the Canadian hatchery. Four other British Columbia tributaries to the Kootenay (Canadian spelling) River had 50 or more spawners.

In the Tobacco River, eggs survived well through January. Good survival is also expected in Kokomun and Norbury creeks. Survival in salmon, from egg to maturity, is usually less than 1%, but enough should remain to continue Lake Koocanusa's development as a salmon water.—*Mike Aderhold, Region 1 (Kalispell) information officer*

## Barthule Named "Officer of the Year"

John Barthule is from the old school where wardens still refer to a "gun battle" going on down below in a dry wash on the opening day of antelope season. He's had his life threatened by an irate receiver of Roundup, Mont.-style game warden justice. A few years ago, he "shut down" a wild game poaching operation by two Michigan violators who then sold wild game dinners at their ski resort back home. After the dust cleared, the two tried to sue John for ruining their business enterprise.

He tracked two hunters who had abandoned their elk meat back to their midwestern home and told them he didn't care if they had hunted all over North America, the next time they came back to Montana, he was gonna pick 'em up. ". . . even if I have to go down and keep that complaint valid year to year for the rest of my life." Shortly after, they settled with the judge.

Interesting things happen during a career as a game warden, and much of what he's seen and done was responsible for John being named Montana's Wildlife Officer of the Year by Shikar-

John Barthule

Safari Club International. Recognition of outstanding conservation officers is one of many club programs to advance an understanding of wildlife worldwide.

John served in the Air Force in the South Pacific for five years during World War II. He was a member of the Helena Police Department afterward, and, in 1962, started his career with Fish and Game.

"I've worked in Billings, Great Falls, Anaconda, and Roundup. Been here in Roundup for 15 years since I took over from Raleigh Shields." He lives there with his wife Dorothy and youngest son, John Jr. Three daughters and a son have grown up and left home.

"That award means a lot to me," John explains. "It's an incentive for all wardens to do the best job possible. It's a real honor. I really appreciate it—and I'll tell you—I just never figured I'd get it."

Time's catching up with John, and he retired from Fish, Wildlife and Parks in April. "Ah, you know, your kids grow up, and then you're a grandpa. It just all moves along. But I still got lotsa things I want to do."—*Bill Pryor, Region 5 (Billings) information officer*

## Miller Named To Boat Safety Council

Bob Miller, safety administration officer for the department's Law Enforcement Division, has been appointed to the National Boat Safety Advisory Council. He will be sworn into his position in ceremonies May 17 at Annapolis, Md.

Miller is past president of the Western States Boating Law Administrators Association and a member of the Law Enforcement and Education committees of the National Association of State Boating Law Administrators. He is a member of the U.S. Coast Guard Auxiliary and is active in the Gates of the Mountains Boat Club in Helena.

The council was created to advise the Secretary of Transportation on matters related to recreational boating safety. Its purpose is to improve boating safety and to foster better use of the nation's waters; this goal is achieved by encouraging and assisting states, the boating industry, and the public in developing safety programs.

Miller is one of seven new members named to fill a three-year term. The full council includes 21 members—seven from the boating industry, seven from state offices responsible for boating programs, and seven from the boating public.

## Federation Seeks Award Nominees

The Montana Wildlife Federation is seeking nominations for the Mello-Ohrmann Award which recognizes Montana's "Conservationist of the Year."

The annual award of an original bronze sculpture by artist Bill Ohrmann recognizes the outstanding efforts of a Montanan in protecting wildlife and wildlife habitat. Nominees may be either a citizen conservationist or a professional in conservation work.

The award is a result of an agreement between the Montana Wildlife

1983 Mello-Ohrmann Award

Federation, Missoula businessman Fred Mello, and Montana sculptor Ohrmann. Each year, Mello donates an original bronze sculpture of a Montana big game animal to the winner. This year's bronze will be of a mountain lion and her kittens.

The winner will be selected by a panel with one representative from the federation, one from the Department of Fish, Wildlife and Parks, and Mello.

The winner will be announced at the federation's annual meeting and banquet in Fairmont Hot Springs June 4. Nominations should be sent to: Mello-Ohrmann Award, Box 3526; Bozeman, MT 59715, by May 10. They should include evidence of the nominee's activities and accomplishments in the field of conservation.—*Bill Thomas, Region 2 (Missoula) information officer*

## Wildlife Society Honors Posewitz

At its annual meeting in Missoula recently, the 150-member Montana Chapter of The Wildlife Society honored Jim Posewitz with its Distinguished Service Award.

Posewitz, current administrator of the Department of Fish, Wildlife and Parks Ecological Services Division, has served Montana's wildlife resource for 22 years, working for the department in Great Falls, Glasgow, and Helena.

He was recognized for his contribution in formulating and implementing a series of environmental laws which, over the last 15 years, have made Montana a leader in wildlife conservation. Included are statutes dealing with water rights, facility siting, mined land reclamation, hard rock mining, water quality, and stream preservation.

Singled out at the presentation were Posewitz' efforts in securing instream flows for fish and wildlife in the Yellowstone River.

Mike Rather, U.S. Forest Service biologist from Dillon, was named Biologist of the Year. He was honored for his efforts in securing modifications for wildlife in the Beaverhead National Forest Management Plan.

Wynn G. Freeman Memorial Scholarships for $200 each were presented to Robin Rae Bown, a University of Montana graduate student in wildlife biology from Missoula, and to Jody Canfield, Bozeman, a Montana State University wildlife graduate student. The scholarships honor Mr. Freeman, long-time administrator of the department's Wildlife Division, who died in Helena in 1978.

## Project Wild Steering Committee

A new, creative program is about to start in Montana. Called Project WILD, its objective is to teach children from kindergarten through grade 12 about the outdoors and wildlife.

Pictured clockwise is the steering committee for Project WILD: Mary Heath, teacher, Irving School, Bozeman; Jay Sumner, teacher, Arlee High School; Terry Knupp, Parks Division, Department of Fish, Wildlife and Parks; Vince Yannone, Conservation Education Division, Department of Fish, Wildlife and Parks; Dave Evans, teacher, Havre 7-8; Fred King, Wildlife Division, Department of Fish, Wildlife and Parks, and Gary Hall, Office of Public Instruction. Not pictured is Al Elser, Fisheries Division, Department of Fish, Wildlife and Parks.

A teacher's guide, emphasizing wildlife, has been developed and will be available in fall 1983. Educators and resource experts from throughout the western United States have developed the material for this guide, and workshops will help teachers in presenting Project WILD. Those working with the program believe it will be a giant step forward in teaching young people about the needs of wildlife.

The Montana plan has been developed by the steering committee. The committee will continue to provide guidance and direction, but a successful program requires the participation of teachers and other resource people. If you want more information, contact: Vince Yannone, Department of Fish, Wildlife and Parks, 1420 E. Sixth Ave.; Helena, MT 59620, or Gary Hall, Office of Public Instruction, 1300 11th Ave.; Helena, MT 59620.

## Boating Safety Education Works

"Hey, Dave, let's go for a boat ride." These are familiar words in the spring, after a season of ice and snowflakes. It's a beautiful spring day, about 70°—with a weather forecast for more of the same—so Dave and his buddy load the boat onto the trailer, hitch the trailer onto the car, and head for the river. Will this outing be a relaxing and enjoyable trip? The odds are good that it will, if Dave and his friend are safe, knowledgeable boaters.

To help them and other boaters, the Department of Fish, Wildlife and Parks has developed a water safety textbook, "Better Boating." To obtain a "safe boating certificate," you must complete at least six hours of instruction based on this 88-page text and obtain a grade of at least 90% on a written examination. Classes are conducted at various times throughout the state and explore a variety of subjects: classification of boats, basic boating safety laws, equipment, safety afloat, what to do in case of fire, and first aid. The course answers questions like, "How many people can my craft safely hold?" Knowing the answers spells the difference between a safe excursion and potential tragedy.

School systems have driver education classes. What the department offers is the same sort of instruction, only with a floating craft as the vehicle. After completing this course, the individual knows more about boating safety; such knowledge goes a long way toward making boating a safer activity for all who participate.

In addition to the course, the department offers a boating safety pamphlet, which is also available from many boat dealers and sports shops. For example, Missoula area boat dealers are encouraged to give all customers and other interested persons a copy. In addition, the department has a variety of visual aids concerning water and boating safety available to the public. During the year, more timely information—such as reminders about personal flotation devices (life jackets) and decal requirements—is given to the public through news releases. Information is also available from regional offices. The Missoula regional office displays an aerial photo of the Bitterroot and Clark Fork River systems. Much information can be ob-

tained from studying this map: location of launch and recovery areas, distances between various spots, location of hazardous areas such as dams, weirs, snags, rapids, etc.

The U.S. Coast Guard has developed some interesting numbers relating to boating. For example, in number of deaths per hour of use, boating accidents rank second to automobile accidents. Of 1,500 fatalities in 1981, 61% of those who died were younger than 16. Ninety per cent of all collisions are caused by human failure, and 40% of all collisions occur after dark. After four hours on the water, with an air temperature of 86°, reaction time is the same as that of a person legally defined as drunk.

With such statistics, the need for a boating safety program becomes clear.

The Federal Boat Safety Act of 1971 establishes minimum safety standards for boats and associated equipment, authorizes financial assistance to the states, directs that a boating safety advisory council be established, and provides for the numbering of undocumented vessels equipped with propulsion machinery.

This act has contributed substantially to the department's boating safety and boating education efforts. Before its passage, wardens enforced a few boating activities. But since its passage, the department has purchased several boats and enforcement efforts have expanded. Many wardens have saved lives while on routine patrol. Also important is spotting defective equipment or dangerous actions that could cause accident or injury. Wardens receive training through the U.S. Coast Guard's regional schools and academy.

By 1985, 79 million boaters will be operating 18 million boats on waters in the United States. In 1978, with 13.6 million recreational boats on the water, 1,321 boaters lost their lives in boating accidents. As the Coast Guard's manual states: "Many of these fatalities could have been prevented through timely enforcement of the boating laws."

The water safety patrol is defined as "a roving waterborne patrol of boating areas for the purpose of deterring, detecting, and reporting unsafe practices; observing aids to navigation and reporting deficiencies, and being immediately available for response to a search and rescue demand." Just the presence of these patrols—especially when other boaters see them stopping violators at various times and locations—should deter illegal or unsafe activities.

The department's law enforcement personnel who patrol Montana's waters are trying to decrease the number of accidents and deaths in the boating community. With the boating public's help, we believe this is an attainable goal.—*Ed Kelly, Region 5 (Billings) warden sergeant*

## Continental Divide Trail

The colorful Continental Divide National Scenic Trail will meander through more than 700 miles of western Montana. According to U.S. Forest Service personnel in the Northern Region's Missoula headquarters, the trail in Montana will run through eight national forests: the Bob Marshall, Scapegoat, and Anaconda-Pintlar wildernesses, and Glacier National Park.

In Montana, the trail will follow close to the Continental Divide and will be primarily on federal lands. Along its route, there are small amounts of Blackfoot Tribal, Champion International, Burlington Northern Co., and private land.

Although the final development/management plan has not yet been approved, its major purpose is to provide a continuous travelway for recreationists where no trail exists.

Topographic maps of the Montana portion (as well as the sections in Wyoming, Colorado, and New Mexico) are available from: U.S. Geological Survey, Distribution Section, Federal Center, Building 41; Denver, CO 80225, and at local retail stores. Montana national forest and wilderness maps can be found at ranger districts, national forest headquarters, and the Northern Region headquarters in Missoula.

DFWP photo: Barbara Brown Lathrop

## All Four Doing Fine

During June 1982, the beginning of my summer on Wild Horse Island, the old horse stayed close to the Headquarters Cabin on the island's south side. He watered in the bay near the dock in the evenings. During the day, he walked the island, which probably contributed to his good physical condition. He was very cautious and seemed unusually restless. In March, he had lost his companion of more than a quarter of a century, a brown mule at least 36 years old (for their story, see "Wild Horse Island: Where the Horse and Mule Roam Free," *Montana Outdoors*, March/April 1982).

On Oct. 3, 1982, the department successfully transplanted three geldings onto the island in northwestern Montana's Flathead Lake—a chestnut, about 17 years old; a bay of approximately 9 years, and a grey pinto, about 13 years old. The three were rounded up near Rock Springs, Wyo., and came to the department through the Bureau of Land Management "Adopt-a-Wild-Horse" program.

The horses were transported to the island on the S.S. *Hodge*, a boat used on Flathead Lake. They were first loaded into a department stock truck, and the truck was loaded onto the deck of the S.S. *Hodge* at Dayton. The boat crossed the lake, docking at Skeeko Bay on the north side of the island, where the horses were unloaded and given their freedom.

Each month, department personnel check on them. They are accepting each other, and the old stallion seems content once again. He now has taken the place of the mule as protector of the herd, and the four seem to coexist happily. This successful transplant has allowed the Department of Fish, Wildlife and Parks to maintain the image and status of the island as Wild Horse Island.— *Barbara Brown Lathrop, park ranger, Wild Horse Island*

photo: Larry Eaton

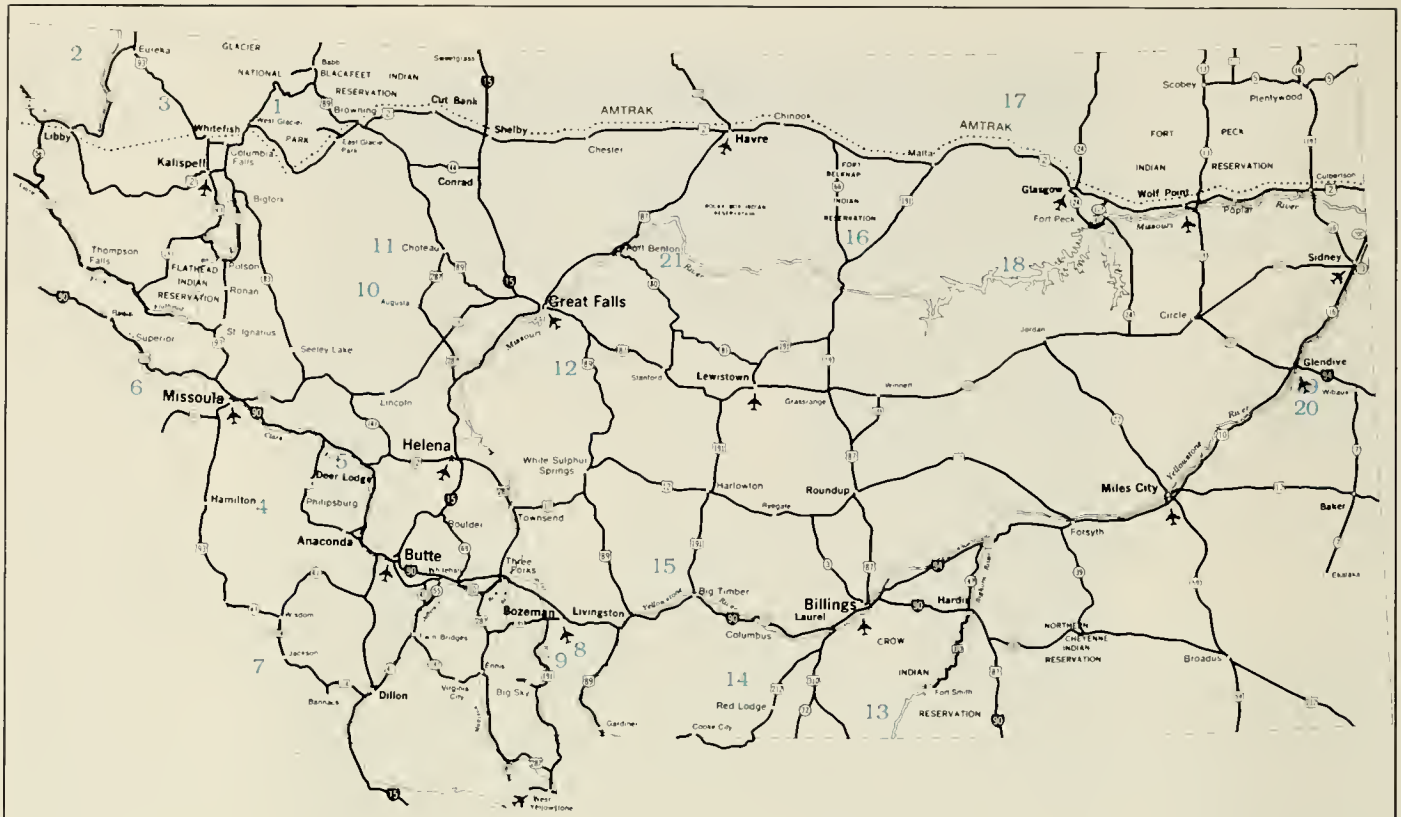
# TAKE A HIKE

As outdoor activities go, hiking is pretty simple. You don't need mounds of expensive outdoor equipment. For many hikes, all you need is a comfortable pair of boots or sturdy walking shoes and a day pack to carry water, lunch or snacks, and emergency provisions.

To enjoy some of the hikes described on the following pages, you don't have to be in "Superman" (or "Superwoman") shape; they require less than a day and getting to the trail head is easy. However, other hikes require several days, special provisions, and the need to be in top-notch physical condition. Still, it's an ideal form of recreation, because *you* determine how strenuous it will be.

Some of the trails described are suitable for the entire family; others are more appropriate for those who have done a fair amount of hiking and are able to walk 12 or more miles per day in rugged terrain. The first section of one of the hikes is designed so those in wheelchairs or who must use walkers or crutches can enjoy it. And another has interpretive stations with braille included so the trail can be used by the blind, with a sighted person as guide.

Take a hike—and enjoy every step. It's a way of getting to know Montana's outdoors.


GLACIER
NATIONAL
BLACKFEET INDIAN RESERVATION
Cut Bank
Shelby
AMTRAK
Havre
Chinook
Malta
Scobey
Plentywood
FORT PECK INDIAN RESERVATION
Glasgow
Wolf Point
Poplar River
Sidney
Libby
Whitefish
Kalispell
Columbia Falls
West Glacier
East Glacier Park
Conrad
Bigfork
Thompson Falls
FLATHEAD INDIAN RESERVATION
Polson
Ronan
St. Ignatius
Seeley Lake
Missoula
Great Falls
Fort Benton
Lewistown
Circle
Glendive
Helena
Deer Lodge
Philipsburg
Hamilton
Anaconda
Butte
Boulder
Townsend
White Sulphur Springs
Harlowton
Roundup
Miles City
Forsyth
Baker
Bozeman
Livingston
Three Forks
Big Timber
Billings
Laurel
Hardin
CROW INDIAN RESERVATION
NORTHERN CHEYENNE INDIAN RESERVATION
Broadus
Dillon
Big Sky
Red Lodge
Cooke City
Fort Smith
Virginia City
Ennis
Bridger
Jackson
Wisdom
Lincoln
Lewis & Clark
Judith
Musselshell
Yellowstone
Powder
Custer
Rosebud
Carbon
Stillwater
Sweet Grass
Toole
Pondera
Teton
Chouteau
Hill
Blaine
Phillips
Valley
Roosevelt
Sheridan
Daniels
Richland
Dawson
Wibaux
Fallon
Carter
Powder River
Garfield
McCone
Prairie
Golden Valley
Musselshell
Petroleum
Fergus
Judith Basin
Wheatland
Meagher
Park
Gallatin
Madison
Beaverhead
Granite
Powell
Lake
Sanders
Mineral
Flathead
Lincoln
Ravalli
Missoula
Deer Lodge
Silver Bow
Jefferson
Broadwater
Gallatin
Park
Sweet Grass
Stillwater
Carbon
Big Horn
Treasure
Rosebud
Powder River
Custer
Fallon
Carter
Prairie
Dawson
Richland
Roosevelt
Sheridan
Daniels
Valley
Phillips
Blaine
Hill
Liberty
Toole
Pondera
Teton
Chouteau
Cascade
Judith Basin
Fergus
Petroleum
Golden Valley
Musselshell
Yellowstone

western hemlocks trimmed with goat's-beard, a variety of lichen; valuable western white pine; paper birch; tamarack; yew; alder, and mountain maple.

The giant trees form a closed canopy that holds the moisture and opens a forest floor carpeted with bracken ferns, several mosses, at least 15 different kinds of fungi, and a variety of wildflowers, including queencups, columbines, harebells, beargrass, pyrola, forget-me-nots, and many more.

In the spring, everything is new, green, and shiny with moisture. In fall, the trail is covered with bright yellow cottonwood leaves, larch needles, and cedar cones. Every week—from the last snow of the spring to the first of the fall—has distinctive sights, smells, and sounds.

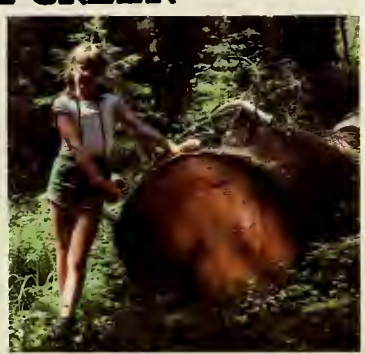
This trail can be crowded during the park's peak season, June 15-Aug. 15. The National Park Service has taken extraordinary care to protect the shallow-rooted plants by constructing elevated boardwalks in some of the more sensitive areas. There are out-of-the-way benches for resting, visiting, or simply relaxing.

Those in wheelchairs or who must use a walker or crutches can experience this beautiful area by coming in through the old Avalanche Campground, which has a surfaced path all the way to the gorge.

If you are dressed properly, this little walk can be enjoyed during the off-season, and is fun even on bad-weather days.—*Mike Aderhold, Region 1 (Kalispell) information officer*

## VINAL CREEK

**General description:** a weekend trip with views of impressive western tamarack and red cedar stands
**General location:** five miles northeast of Yaak
**Maps:** Kootenai National Forest map; topos—Yaak, Lost Horse Mountain


DFWP photo: Mike Aderhold

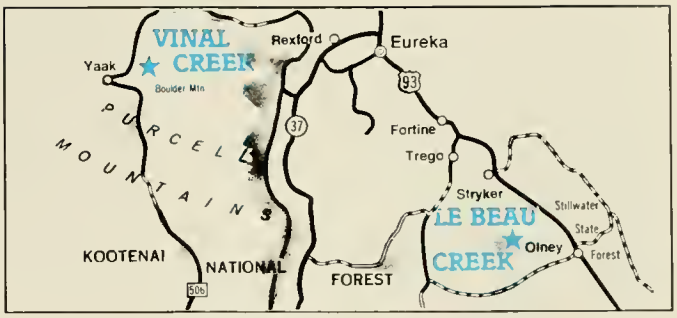
The Vinal Creek Trail takes off about five miles northeast of the town of Yaak, from Forest Road #746 which parallels the east side of the upper Yaak River. The well-marked trail head is just north of a bridge that crosses Vinal Creek.

The first four miles along the Vinal Creek bottom pass through an impressive stand of western tamarack, some four feet or more in diameter and most over 300 years old. Much of the Kootenai Forest is influenced by moist coastal weather which penetrates inland during the fall, winter, and spring. This has created the state's most impressive timber stands.

Where the trail crosses Vinal Creek, there are huge red cedars, some more than 25 feet around. The mature timber provides habitat for pileated woodpeckers, barred owls, goshawks, and numerous warblers, vireos, and kinglets.

The trail junctions near the 28-foot Turner Creek Falls, with one fork going uphill to Mount Henry (7,243 feet) and the other going to a chain of five lakes in a narrow canyon. The lakes vary in size from a half-acre to 6.5 acres and are the summer range of a few deer, several moose, and several species of waterfowl. The canyon is a likely area in which to observe the little 6- to 8-inch pika (rock rabbit) and the remains of its "haystacks."

A trip to the northwestern corner is an enjoyable way to spend a summer weekend, and the Vinal Creek Trail is just one of many offering a good look at Montana's wet forests.—*Mike Aderhold*




## LE BEAU CREEK

**General description:** a rugged hike, marked with rock outcrops
**General location:** five miles northwest of Olney
**Maps:** Flathead National Forest map; topo—Radnor

DFWP photo: Mike Aderhold

This place is as hard to visit as the Avalanche Creek Trail is easy. The rugged 5,000-acre roadless area lies at the extreme north end of the Tally Lake Ranger District in the Flathead National Forest.

Lagoni Lake, south of Upper Stillwater Lake and five miles northwest of Olney off U.S. 93, is one place to start, but since there are no marked or otherwise established trails, the starting place doesn't really matter.

This is an area for the explorer and the experienced cross-country enthusiast. It has some 50-year-old loggers' skidding trails and plenty of game trails. That's the way most local folks would like it left.

It is wise to hike this area with at least one partner, a compass, and a topo map.

The area's unique attraction is geological. Tongues of ice from what is now British Columbia severely scoured this site during the last glacial period. When the ice melted, it left numerous basins and long, fingerlike lakes with a northwest-southeast orientation. The ice and subsequent erosion also left numerous rock outcrops—some several acres in size, and others not much bigger than a small house. Some of these outcrops are 70 feet high, and it is possible to climb them and look straight out at the upper third of the forest canopy.

Most of the lowland glacial scars are today covered by eroded fill, but in the Le Beau country, it is still possible to see and feel where the ice worked the rock. These outcrops also offer the chance to study lichens, club mosses, ferns, and herbs.

In this same country, hikers can set a course for the 800-foot-deep Le Beau Creek Canyon or Hole in the Wall Lake, search out and explore relic timber stands, or hike country that may not have been visited for a decade or more.

If there really is a sasquatch, or a grizzly or wolf that hasn't been tallied, this is where it would be.—*Mike Aderhold*

## FUSE LAKE

**General description:** an easy day hike for the whole family
**General location:** Sapphire Mountains, 25 miles west of Philipsburg or 20 miles east of Hamilton
**Maps:** Deer Lodge National Forest or Bitterroot National Forest maps; topo—Mount Emerine

In just an hour, you can hike into Fuse Lake and take advantage of one of Montana's unique fishing opportunities. Fuse Lake is full of Arctic grayling, the beautifully colored "lady" of Montana's game fish.

From Philipsburg, travel south on U.S. 10A five miles to Porter's Corner. Turn and head west on the scenic Skalkaho "highway" for about 25 miles. The "highway" is a well-traveled, maintained gravel road connecting the Flint Creek drainage with the Bitterroot Valley.

A sign on the Skalkaho road marks the turnout to the Fuse Lake trail head. Park at the bottom of a clearcut and hike up an old logging road to the top of the cut. The trail from there to the lake is an easy grade, midslope hike.

Scenic Fuse Lake is nestled in a high-elevation cirque. Its 13 acres are easily fished from shore—for hungry 5- to 8-inch grayling.

There are camping spots near the lake, but an improved campground, Crystal Creek, is one mile up the Skalkaho road from the trail head. Five miles farther west, over the pass (elevation, 7,250), is beautiful Skalkaho Falls.—*Bill Thomas, Region 2 (Missoula) information officer*

# TRASK LAKES

**General description:** an overnight family trip of moderate difficulty
**General location:** Flint Creek Mountain Range, 12 miles west of Deer Lodge
**Maps:** Deer Lodge National Forest map; topos—Rock Creek Lake, Pike's Peak, and Pozega Lakes

photo: Dave Books

Like an island of mountains, the Flint Creek Range is encircled by U.S. 10A, linking the towns of Anaconda, Philipsburg, and Drummond, and Interstate 90 through Deer Lodge. From these highways, the Flints are majestic snow-clad peaks skirted by a diverse landscape of green timber and beautiful, open park areas.

For those who have time to explore the Flints—your experience will be rewarding. But a moderately easy hike of seven miles will take you to the heart of the Flints—the Trask Lakes Basin.

Turn west at the only stoplight on Deer Lodge's main street and follow the county road for 12 miles to Rock Creek Lake (it's really a reservoir). The paved road out of Deer Lodge quickly turns into a good gravel road. At the lake, the road passes by numerous private cabins along the north shore. Park at the upper end of the lake where the road turns into a rugged jeep-type road.

Hiking along the first three miles of the old jeep road is a lesson in contrasts. Initially, it is shocking to see the impacts that man and his four-wheeled machines can have. Often it appears that much of the creek has run down the road, or vice versa. But in contrast, this same road takes you along a scenic valley bottom with glimpses of the creek, lush grassy openings, and wet areas decorated with wild bog orchids.

The road continues up the Rock Creek drainage, but the trail to Trask Lakes turns off to the south. It is a moderate, uphill, four-mile hike from the road to the beautiful lake-studded basin. The trail takes you along the shoreline of one of the lakes. Several sites suitable for camping ring the lake.

The basin has seven lakes along with numerous potholes, but you will need the Pozega Lakes topo map to explore them. The fishing is excellent for abundant, but small, brook trout.

The future of this fragile area will be determined through the Deer Lodge National Forest Plan process. As a result of RARE II, the Trask Lakes area is part of a 52,000-acre wilderness study area in the Flints. The public's comments to the Forest Service will affect how this backcountry area is eventually managed.—*Bill Thomas*

# STATELINE-FISH CREEK LOOP

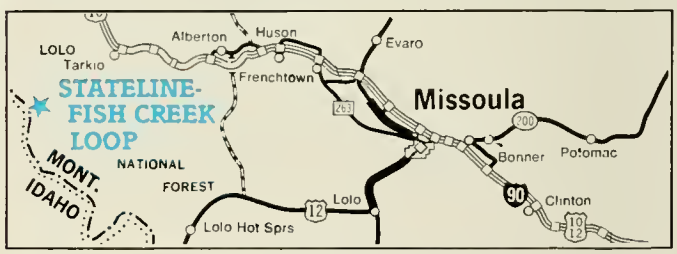
**General description:** a rigorous trip of at least three days
**General location:** approximately 20 miles southwest of Alberton
**Maps:** Lolo National Forest map; topo—Straight Peak

Where can you hike with one foot in Montana and the other in Idaho? The Stateline Trail offers this, along with some of the most beautiful scenery in Montana or Idaho.

Part of the Great Burn of 1910, this area also offers excellent fishing and a chance to get away from crowds.

Take the Fish Creek exit off Interstate 90 west of Alberton, and travel eight miles south, up the Fish Creek drainage. Turn west, and then it is seven miles to the Forest Service Guard Station at Clearwater Crossing. Plan on spending the night at Clearwater Crossing and getting an early start the next morning.

Day one is a long, but relatively easy, hike of 11 miles up the North Fork of Fish Creek to Goose Lake in Idaho. Goose Lake is a barren pothole, with an excellent camping spot. Watch the ridge above the lake for elk, especially in the evening. For those who haven't had enough hiking for one day, backtrack down the North Fork Trail half a mile to an




obscure hunters' trail leading to the north, and Trio Lakes. Upper Trio is a beautifully framed cirque with abundant small brook trout.

Day two starts with a short hike up Trail #730 to where it crests the Montana-Idaho border south of Goose Lake. The seven-mile hike down the stateline is probably one of Montana's (and Idaho's) best kept scenic secrets. Your destination should be lower Siamese Lake. Don't mistake Straight Lake along the way for one of the Siamese twins. When upper Siamese Lake is in view, look for a hunters' trail cutting back to the north under the ridge line. It will take you down to upper Siamese Lake and from there you'll have to bushwhack to the lower lake. There is a good camping spot at the lower lake. Plan on catching a cutthroat trout or two for dinner.

Day three will be remembered for the startling contrasts between the alpine environment of Straight Peak and the trail through the huge cedars in the cool creek bottom of the West Fork of Fish Creek.

From lower Siamese, follow the hunters' trail east up a series of eight switchbacks to its junction with Trail #510. Head north and east along the trail, past the Straight Creek turnoff at Chilcoot Pass, and on up to Straight Peak. Stay on the main trail and don't be sidetracked by one of the numerous game trails. This 12-mile trip changes abruptly as you drop down 2,000 feet in the mile (20 switchbacks) from Cedar Peak to the West Fork of Fish Creek. Huge western red cedar and western white pine crowd the trail down to Clearwater Crossing.

As a result of RARE II, this area is part of the recommended Great Burn Wilderness Area. The public's comments to the Forest Service will influence this possible wilderness designation.—*Bill Thomas*

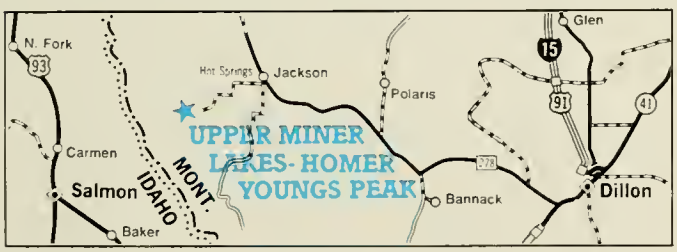
# UPPER MINER LAKES-HOMER YOUNGS PEAK

**General description:** an 18-mile hike for the seasoned backpacker
**General location:** west of Wisdom and Jackson
**Maps:** Beaverhead National Forest Travel Plan map; Bureau of Land Management map #31, Big Hole; topo—Homer Youngs Peak

DFWP photo: Tom Greason

If you're a seasoned backpacker ready for more adventure and with a desire to see some new, outstanding backcountry, this trip may interest you. The 18-mile loop offers spectacular scenery, lake fishing, relaxing campsites, strenuous climbing, and the challenge of off-trail travel. The elevations range from 7,100 to 10,600 feet.

The Upper Miner Lakes-Homer Youngs Peak area in southwestern Montana is part of the Bitterroot Mountain Range known as the West Big Hole. This band of high country wilderness along the Continental Divide, bordering Montana and Idaho, lies west of Wisdom and Jackson, Mont.




This land is managed by the Beaverhead National Forest, Wisdom Ranger District, and has been recommended for wilderness designation.

The trail head is two miles west of Lower Miner Lake and the access is from Jackson. The Miner Creek Trail follows the drainage for almost five miles, gaining over 1,000 feet in elevation, before ending at Upper Miner Lake. The uppermost lake is 700 feet above and to the north of the first lake. The fishing can be good, plus the scenery is superb.

The next destination is Ridge Lake. This segment is potentially the most tedious as the route sidehills around the ridge to the north of the Miner Lakes drainage between the 8,400- and 8,600-foot contours. There are no trails, so the Homer Youngs Peak topo map is essential, as well as reassuring.

After leaving Ridge Lake, your cross-country skills can again be used as you seek out Rock Island Lakes to the northwest. Although mostly surrounded by conifers, these two lakes appear open because of the broader topography of the basin. Adequate camping sites can be found, especially away from the trails. Check out the rock island, try the fishing, and size up Homer Youngs Peak (north) for the following day's climb.

The ascent of the peak (10,621 feet) will be the most physically demanding of this three-day hike, but the rewards certainly warrant the effort. The work begins by heading northwest out of the Rock Island Lakes Basin to the saddle above. Once there, the obvious (and safest) route is more clear. Follow the northeast ridge which begins at your feet. The climb is steep, with some boulder hopping and maneuvering necessary. There is no danger, provided good judgment prevails. Remember, weather conditions can rapidly change near the Continental Divide. The view from the top is spectacular in all directions and well worth some time.

Once down from Homer Youngs Peak, the four-mile walk from Rock Island to the Miner Creek trail head passes quickly as you commit to memory some of the wild country of the West Big Hole.—*Tom Greason, Parks Division, Bozeman*

# PALISADE FALLS

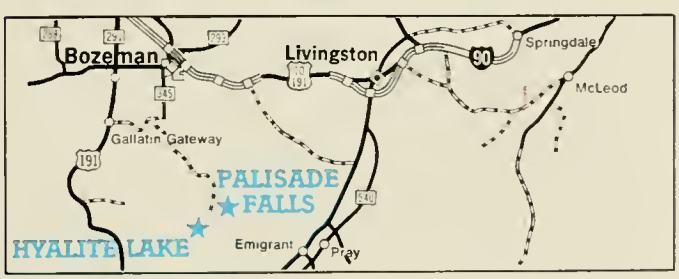
**General description:** a gentle hike suitable for novices
**General location:** about 18 miles south of Bozeman, plus three miles of connecting roads
**Map:** Gallatin National Forest Travel Plan map

Snow runoff and fresh mountain spring water tumble 98 feet over a volcanic ledge before exploding into rainbow-colored mists which gently settle down to form crystal clear Palisade Creek in the Hyalite Peaks south of Bozeman. The beauty of Palisade Falls can be enjoyed by the most novice hiker, with a gentle .6-mile hike up the Palisade Falls National Recreation Trail.

The trail not only provides a gentle walk to the falls, but also is constructed to enable the visually handicapped to use it with the aid of a sighted companion. Along the trail, the adventurer will find 16 interpretive stations with braille and text which describe the trees, plants, and geological features of the area. The Palisade Falls Trail is closed to motor vehicles, so the hiker can enjoy the smells and sounds of a quiet Montana forest.

To get to the Palisade Falls National Recreation Trail from Bozeman, take 19th Avenue due south for 7.5 miles to Hyalite Canyon Road #62. Head south 10.5 miles to Hyalite Reservoir, continue east around the reservoir for two miles to the East Fork Road, and then onward one more mile to the Palisade Falls parking area. The trail head begins at 6,900 feet elevation and gains 540 feet as it winds through lodgepole pine, subalpine fir, Engelmann spruce, Douglas-fir, and quaking aspen stands.

For more detailed information about this or other Gallatin National Forest trails, contact the Bozeman Ranger District in Bozeman.—*Doug Monger, parks manager, Bozeman*



# HYALITE LAKE

photo: Dave Gates

**General description:** spectacular scenery on a moderately difficult 7.2-mile hike
**General location:** about 18 miles south of Bozeman, plus four miles of connecting roads
**Map:** Gallatin National Forest Travel Plan map

Numerous waterfalls, scenic views of a glaciated canyon overlooking a mountain valley, and breathtaking snow-capped peaks can all be enjoyed by the backpacker who ventures to Hyalite Lake in the Gallatin National Forest. The 7.2-mile trail rises 2,000 feet from the trail head to Hyalite Lake which is nestled among the craggy cliffs of Fridley and Hyalite peaks.

The backpacker will find 10 waterfalls along the route to the lake and may be able to view ice-blue frozen waterfalls hanging from the steep canyon walls in early spring and late fall. Because Hyalite Lake sits in an alpine meadow, backpackers should plan on bringing stoves for cooking, as wood for fuel is very limited.

The Hyalite Lake area can easily be reached in a long morning's hike. After camp is set, you will probably have time to take a 1½-mile hike to the summit of 10,299-foot Hyalite Peak which offers a spectacular view of the Gallatin and Bridger mountains. You can then head east along the ridge to 10,151-foot Fridley Peak for a grand view of the Yellowstone River Valley and the Absaroka Range.

To reach the Hyalite Lake Trail from Bozeman, take 19th Avenue due south for 7.5 miles to Hyalite Canyon Road #62. Proceed 10.5 miles to Hyalite Reservoir, then around the east shore of the reservoir four miles to the trail head.

The hiker can expect a gentle grade for the first 3.5 miles, then a slightly steeper grade and numerous switchbacks for the remainder. The trail is usually in its best condition in midsummer, although the more adventuresome may enjoy the snow fields that cover parts of the upper trail until midsummer. Regardless of the time of year, those who venture to Hyalite Lake will undoubtedly enjoy the spectacular scenery and views.—*Doug Monger*

# GIBSON RESERVOIR

DFWP photo: Bob Cooney

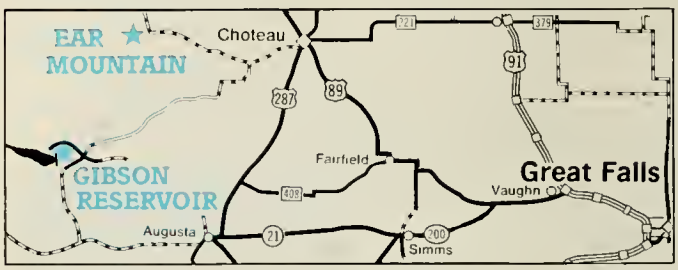
**General description:** a 14-mile trek, but on a fairly level trail
**General location:** 75 miles west of Great Falls
**Maps:** topos—Patrick's Basin, Arsenic Peak

For those seeking a fairly flat trail, but wanting the serenity of a mountain environment, the Gibson Reservoir Trail is the place to try.

Located 75 miles west of Great Falls, hikers can easily find the area by following the Sun River Canyon Road northwest of Augusta, between Augusta and the Sun River Canyon. On the way, you will pass Willow Creek Reservoir and the Sun River, both good places to wet a line. After reaching Sun River Canyon, a paved road leads to Gibson Dam and eventually to the reservoir's edge. The trail begins at the far side of a steep boat launching area. Just above the launching area is a Forest Service campground. Drinking water is available here—be sure to take some along.

From the take-off point to the head of the reservoir is a seven-mile hike, one way. If you plan to hike the entire distance, set aside the whole day so you won't overdo it. Fishing is not as good in the reservoir as it is above or below, so you might want to carry a camera instead of a rod. You will no doubt have ample opportunity for scenic shots, as well as wildlife photographs. Bighorn sheep, mule and white-tailed deer, black bears, an occasional grizzly bear, and a variety of nongame animals inhabit the area.

Summer and fall are the best seasons to enjoy the beauty of the Sun River country. If you enjoy wildflowers, plan this hike for late June or early July.—*Harley Yeager, Region 4 (Great Falls) information officer*




# EAR MOUNTAIN WILDLIFE MANAGEMENT AREA

**General description:** hiking opportunities abound in every direction
**General location:** 28 miles west of Choteau
**Map:** topo—Ear Mountain

From Great Falls, take Interstate 15 west to Vaughn. At the Vaughn turnoff, pick up U.S. 89 and continue into Choteau. Take U.S. 287 south of Choteau, to milepost 64, then head west 28 miles on a county road. Your destination is the Ear Mountain Wildlife Management Area.

If you enter the area from the Teton River Road, you will see the South Fork Ranger Station. This station provides walking access to the north end of the 3,000-acre wildlife management area and adjacent Bureau of Land Management and national forest lands. If you enter Ear Mountain from the east, park your car or camper in the designated parking area within the boundary of the management area. Fish, Wildlife and Parks regulations permit overnight camping, even though regular camping accommodations are unavailable.

From the parking area, hikers can follow a steadily climbing old road westerly for about two miles. From this point, other old roads or trails take the hiker in almost any direction. The most difficult hike is up the steep slopes of Ear Mountain. The reward is a possible glimpse of mountain sheep and—for sure—a panoramic view of the spectacular Rocky Mountain foothills country. Mule and white-tailed deer, cougars, and black and grizzly bears also inhabit the area. Bring along a day pack, lunch, and water. Consider including a camera and binoculars.

Hike the area in early summer when mother nature carpets the ground with beautiful flowers, or during fall when autumn colors dot the landscape.—*Harley Yeager*

# BELT CREEK CANYON

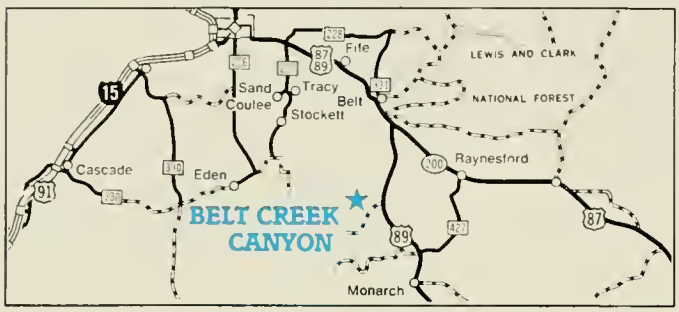
**General description:** a unique and challenging hike
**General location:** 32 miles southeast of Great Falls
**Map:** topo—Riceville

Beartooth Wilderness (photo: Dave Books)

If the thought of hiking along a portion of the original railroad bed of the Montana Central Railroad appeals to you, consider the following hike through Belt Creek Canyon.

Begin this seven-mile hike at the new Sluice Boxes State Monument. To get there from Great Falls, follow U.S. 89 east past Belt to the Armington Junction, then head south toward King's Hill. At the junction of the Riceville Bridge along Belt Creek and the Riceville Hill, turn west and then pull into the Sluice Boxes turnoff. The area is 32 miles southeast of Great Falls.

From the access point, a unique experience awaits those




with enough determination to conquer this challenging hike. Before you head out with your day pack, lunch, and drinking water, consider including a light fishing rod for rainbows and whitefish. The section of Belt Creek you'll encounter also contains a few brown and brook trout.

Mule deer, coyotes, and an occasional black bear inhabit the area. Rattlesnakes frequent the canyon, but with normal precautions, you shouldn't have problems. Perhaps the most enjoyable months to hike this area are May, July, September, and October. June is normally high water, and access through portions of the canyon is virtually shut off.

The most interesting feature of the Belt Creek Canyon hike is the Sluice Boxes portion. The canyon narrows to a point just wide enough for Belt Creek to wind its way through. Hikers must detour around the top of the 50-foot-deep canyon walls. Some of the original railroad bridges from the Montana Central Railroad still stand, but in various stages of deterioration.

The last portion of the hike leads to the Logging Creek Road. This is the rendezvous point for whomever picks up the hikers. Vehicle access is from U.S. 89, just above the canyon highway leading down to Monarch, on 6½ miles of dirt road.—*Harley Yeager*

# BIG PRYOR MOUNTAIN

**General description:** a seven- to eight-mile hike with a gentle gradient
**General location:** about five miles east of Warren
**Maps:** topos—Red Pryor Mountain, Indian Spring, Big Ice Cave

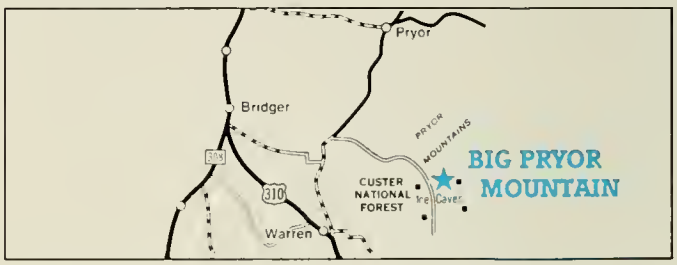
photo: Dr. J. Kirkpatrick

A trip that Glenn Iverson, Eastern Montana College physical education teacher, takes in the Pryor Mountains is pretty casual. He might change his mind about a particular plateau approach halfway through the trip, opting for another more interesting trek up another ridge line. The Pryor Mountains in the Custer National Forest offer many trails and sites with little or no increase in strain as the hiker picks and chooses from among the possibilities.

"I'd take two vehicles to shuttle in. From the town of Warren, go east on the Hett Road. The hike begins about five miles from Warren where the road turns south for Lovell, Wyo. Leave the second vehicle here. At the same intersection, a jeep trail turns north and connects with the main ridge of what's called Big Pryor Mountain. You hike on the trail. You need dry weather to drive to the cutoff, so I wouldn't try it in June or early July," warns Iverson. The hike is seven to eight miles, mostly uphill, on a nice, gentle gradient.

Along Iverson's route, the hiker will pass abandoned mines, blocked mine shafts, and old cabins. Noted along the trail are the Dandy, Sandra, and Old Glory mines.

Traveling up the gradual plateau brings hikers to Big Pryor Mountain (8,786 feet) and the Ice Cave. The area is strewn with ice caves, but this particular one is on the east side of the summit ridge (the summit is marked by an 8- to 10-foot wooden power pole stuck in the ground). The Ice




Cave is snow-covered in June, but easily visible and accessible in early July.

Leaving the peak, head northeast for about two miles to the intersection of Crooked Creek and Sage Creek roads. Here, northeast of Tie Flat, along Sage Creek Road, is where you should leave the first car.

A second hike in this area could start at the Forest Service Trail which leaves from the Sage Creek Ranger Station. Follow the trail straight south up the drainage, where it connects with the jeep trail. From there, you could go east to Big Pryor Mountain. As Iverson says, "Once you get out in that country and start hiking, you'll find you can come out about any place you want to."

Sgt. Nathan Pryor of the Lewis and Clark Expedition named the Pryor Mountains for himself. He surveyed the area on the expedition's return trip down the Yellowstone River. The Pryors have it all—from temperatures and plant and animal forms like the desert at the base, to cool, mountain environments at the summit. The area offers an excellent opportunity to observe hawks and eagles; deer are there, too, along with an occasional elk or black bear.—*Bill Pryor, Region 5 (Billings) information officer*

# GRANITE PEAK

**General description:** a tough three-day trek
**General location:** west of Red Lodge
**Maps:** Custer National Forest map (available at Forest Service Ranger Station, Red Lodge); topos—Alpine, Cooke City

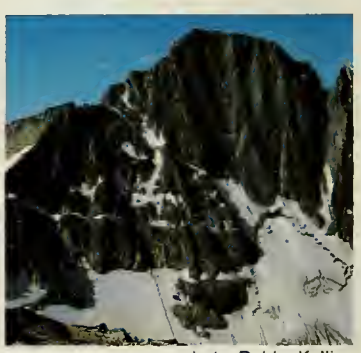


photo: Robby Kallina

Robby Kallina, recreational activities director at Eastern Montana College, has led assaults on Montana's highest peak, Granite (elevation: 12,799 feet). "Best time to go is August or the

first couple of weeks in September," he says. "Labor Day is a biggy, but every other Labor Day it snows. Forest Service records show about 100 people climb Granite every year. If you don't want to see many other hikers, go during the week." Kallina also suggests checking at the Forest Service Ranger Station in Red Lodge for current trail conditions and other information.

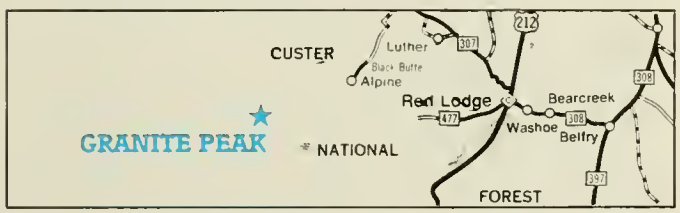
On the average, the hike takes three days. Expect below freezing temperatures at night and plan on bringing wool clothing, including a hat with ear coverings. Wind pants, sunglasses, and sunscreen are also essential.

"Start early each day," continues Kallina. "Take the Phantom Creek Trail (#17) going away from East Rosebud Lake. You'll see some waterfalls along this route." The trail passes by Slough Lake and snakes into switchbacks, climbing for a mile or two. Most hikers take a lunch break on this stretch. One-half mile from the top of Froze-to-Death Plateau (10,140 feet), you'll reach the end of the timber.

From here, walk southwesterly, looking for cairns (rock piles placed along trails by hikers to help themselves and others find the way). These are not well-maintained, however, and a further hint is to stay right of the divide, looking north for an established camp shelter.

"Both nights, camp at the shelter of rocks built by past campers," urges Kallina. "The shelter will handle from six to eight tents, there's no wood for fires, and the wind will cut you to shreds. Other than that, it's a great place. Mountain goats usually can be seen below the campsite," says Kallina.

On the second day, eat breakfast and set out at first light carrying a day pack of provisions for the ascent. Follow the




trail of cairns, or Kallina's special trek. "My trail heads up the unnamed peak west of Froze-to-Death Mountain, marked 11,797 feet on quad maps. From that peak, you can first see Granite Peak. Pick up the cairn trail again one-quarter of a mile below Tempest Mountain (12,000 feet) which lies to the east of Granite." Using a well-developed goat trail, hikers can go right to the bottom of the saddle. The trail is south of, and above, Granite Glacier. Plan on having an early lunch at the saddle.

Traveling up a snowfield takes one to the ridge top, through a notch. Kallina warns against wearing polyester outer garments on the snowfield. Should you slip, you will slide.

Now the hiker faces the most dangerous part of the trek: a snow bridge 200 feet long, and varying from 2 to 10 feet wide. However, a trough tramped by previous hikers adds a sense of safety to the crossing. "It's mostly hand-over-hand climbing from here," Kallina says. "You come up on a big wall and drop down about four or five feet. You'll see a large crack about 12 feet high with plenty of handholds. You go up. Then follow the cairns. They are easier to see in September than July because hikers have added rocks to them all summer. From the top, on a clear day you can see the Tetons."

Kallina suggests starting your descent by 1 or 2 p.m. because thunderheads frequently roll in—and that can mean lightning.

The trip from base camp to the peak and back takes 11 to 12 hours. The hike back out on day three will take six to eight hours. Kallina urges hikers to get into top physical shape before attempting this trek.—*Bill Pryor*

# BIG TIMBER CANYON

photo: Dave Books

**General description:** a hike with several lakes as day-hike destinations
**General location:** Crazy Mountains, about 22 miles from Big Timber
**Maps:** Gallatin National Forest map (available at Forest Service Ranger Station, Big Timber); topos—Amelong Creek, Crazy Peak

With the destination of the Forest Service's Half Moon Campground, leave Big Timber on U.S. 191; proceed 12 miles north, then eight miles west on County Road 197, then two miles west on Frontage Road 197. When you leave the campground and head up Big Timber Canyon, you will be taking a hike amongst the rock walls of the Crazy Mountains. Robby Kallina, recreational activities director for Eastern Montana College, has led people on this trail and advises the following path.

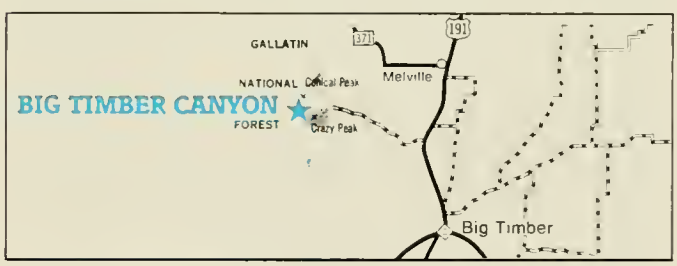
"Actually, you can't get lost going up the canyon, because you just follow the trail which winds up at Twin Lakes, and then you're looking up at the cliffs," Kallina notes.

One-half mile from the campground, a sign marks a short cutoff to Big Timber Falls. Viewing this falls provides a break on the trip in or out of the canyon.

"The trail is an old jeep trail and it crosses Big Timber Creek two times over bridges," continues Kallina. "One mile past the second bridge, a Forest Service sign points the way to Blue Lake. In June and July, you'll still have to cross the creek, but by Labor Day, it's probably dry."

After climbing up some switchbacks, traveling by a couple of ponds, and passing some old mining sites, Blue and Granite lakes await the hiker. Kallina says, "Both have decent fishing, and there are several campsites on the north and west sides of Blue. I think it's a good idea to head for Blue Lake and use that as a base camp—you can easily reach Blue in half a day. From there, you can head off for day hikes to surrounding peaks or just relax in the sun."

A destination farther up Big Timber Canyon is Twin




Lakes. Both are shallow and without fish. The ground surrounding the lakes is wet almost all of the year, except for perhaps late August.

From Twin Lakes, the trail leads up and over, into the drainage to the west. A steep hillside north of Twin Lakes offers hikers a lush, green carpet laced with snowmelt streams. Nearby peaks good for day hikes include Conical (10,748 feet) northwest of Twin Lakes, and Crazy Peak (11,209 feet) south of Blue Lake. The peaks of the Crazies are rock strewn and the vista is not often marred by side-stretching stands of trees. The character of these mountains is one of rough newness, and drainage after drainage of hiking is available for the wanderlustful traveler. Climbs in the Crazies take some time, but the hiker determines the

strenuousness by the pace he or she sets.

One need not be in world-class condition to hike Big Timber Canyon. "I'd say hiking is pretty good from June through October," Kallina says, "but stream crossings will be a little easier in August and later."—*Bill Pryor*

# LITTLE ROCKIES

**General description:** honest-to-goodness mountain hiking in northeastern Montana
**General location:** southwest of Malta, near Zortman and Landusky
**Map:** Bureau of Land Management #16, Breaks

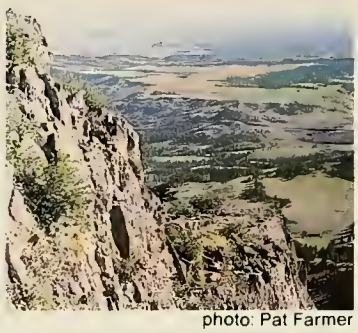


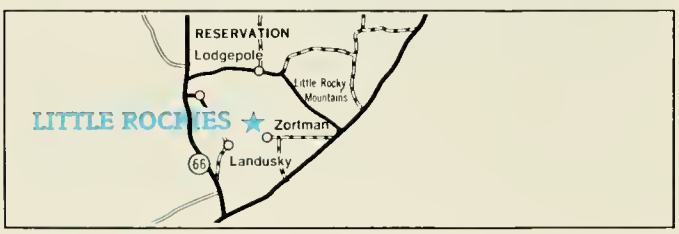
photo: Pat Farmer

Some people might be surprised to learn that northeastern Montana contains a real, *bona fide* mountain range, the Little Rockies. The range covers 50 to 60 square miles and the peaks appear almost like a mirage on the plains of eastern Montana. Although not much for size, they qualify in all respects as mountains. There are 16 peaks over 5,000 feet, with Old Scraggy Peak—the area's highest—topping out at 5,708 feet. Most of the Little Rockies country is under Bureau of Land Management jurisdiction, but about one-third to one-half of the area, primarily on the north side, is within the boundary of the Fort Belknap Indian Reservation. Also, some land is deeded by mining interests.

Gold was discovered in the Little Rockies about 1884, and there are now two active mines. Evidence of past mining activity is abundant. The small communities of Landusky and Zortman, which began as mining camps, are worth visiting for a feeling of the past. Before arrival of the miners, Indians used the Little Rockies extensively, as evidenced by pictographs in caves in the Grouse Gulch area.

These mountains have extensive lodgepole and ponderosa pine, and scattered stands of Douglas-fir, limber pine, and quaking aspen. A herd of 50 to 60 Rocky Mountain bighorn sheep roams primarily on the south side of the Little Rockies and the herd can usually be easily spotted. While not abundant, mule and white-tailed deer may also be seen. One of the few populations of blue grouse in eastern Montana inhabits this area. Many other species of wildlife, including beaver, mink, bobcat, coyote and other mammals and small birds live here, and seeing them provides added attraction for backpackers. Some of the streams have brook trout in them, with Beaver Creek, on the northeastern side of the Little Rockies, offering the best fishing. Don't drink the water in the area; it may be contaminated because of past mining activity.

Old mining and logging trails throughout the Little Rockies provide routes for backpackers. U.S. 191 winds around the eastern and southern sides of the Little Rockies and provides easy access to this interesting and unique range of mountains on the plains of northeastern Montana.—*Jim Liebelt, Region 6 (Glasgow) information officer*

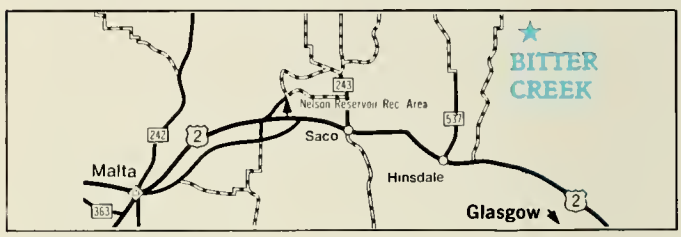



# BITTER CREEK

**General description:** a prairie hike, with a chance to see diverse plant and animal life
**General location:** 27 miles north-northwest of Glasgow
**Map:** Bureau of Land Management #8, Glasgow

Hikers weary of mountain trails, lush meadows, trees, and clear, cold streams might want to consider traversing some of northeastern Montana's finest prairie country. This area is 27 miles north-northwest of Glasgow, 15 miles south of the Canadian border, and can be reached by following a partially graveled road north from U.S. Highway 2 for about 17 miles.

Known as Bitter Creek, this area has been selected by the Bureau of Land Management for study as a possible prairie wilderness area. The Bitter Creek Unit of almost 70,000 acres is about 12 miles wide and 16 miles long. Within it are a wide variety of topographical features including bare, shale hills; brushy coulees; flat, grassy areas, and a rocky rim which surrounds about two-thirds of this expanse. A unique feature is the scattered groves of quaking aspen trees, associated with springs found primarily on the south end of the unit. Aspen trees are rare in northeastern Montana.




Chances for observing wildlife are excellent—mule deer, antelope, and sharp-tailed grouse are especially common. You might also see blacktail prairie dogs, coyotes, red foxes, and a variety of birds. Many diverse plant species are found throughout this prairie scene, and the spring flowers are especially beautiful. Gay Reservoir, in the southwestern portion of the unit, contains planted rainbow trout and you can drive to it for a day's fishing.

Vehicle trails surround the entire Bitter Creek Unit, so you have a choice of starting points for hikes. Bring along drinking water because consumption of surface prairie water is not recommended, and springs in the area might be quite alkaline.—*Jim Liebelt*

# CHARLES M. RUSSELL NATIONAL WILDLIFE REFUGE

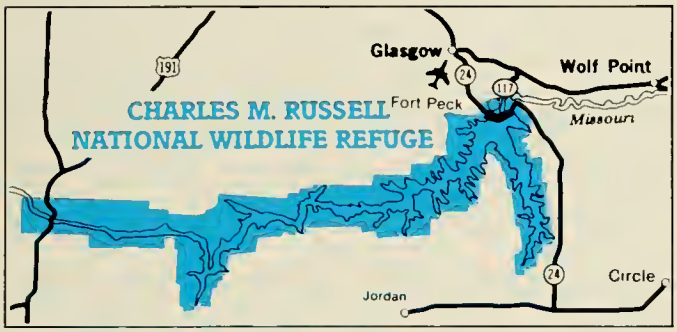
**General description:** breaks country-badlands hikes
**General location:** south of Glasgow
**Maps:** Bureau of Land Management #16, #17, UL Bend; #18, Haxby, for all of the Charles M. Russell National Wildlife Refuge

DFWP photo: Mike Aderhold

The Charles M. Russell National Wildlife Refuge (CMR) comprises over 1 million acres of publicland. It surrounds the 134-mile-long Fort Peck Reservoir, Montana's largest body of water. This combination provides backpackers with an opportunity to enjoy and appreciate some of eastern Montana's most beautiful country.

Much of the CMR is rugged breaks (also called the Missouri Breaks) but some badlands formations mark the east side of the Big Dry Arm of the reservoir. Tall, western yellow pine grows throughout the Breaks; in some areas it is dense enough to give the illusion of walking through a vast forest. Creeping and common juniper and many other shrubs and plants are abundant and enhance the beauty of this land.

Backpackers will enjoy the excellent opportunities for




observing and photographing wildlife. Besides mule deer, antelope, and sharp-tailed and sage grouse, the CMR supports eastern Montana's largest elk herd. The elk are primarily on the north side of the reservoir, with a few west of the Musselshell River on the south side. The refuge harbors many other species of birds and smaller animals. Coyotes are particularly plentiful and you can often hear their yipping choruses after dark. Fort Peck Reservoir contains over 40 fish species and the chance of catching a northern pike, sauger, walleye, and several other species is good.

If the weather is dry, access to many areas around the CMR is easy. Hikers might want to investigate: Musselshell-Crooked Creek, UL Bend, Mickey-Brandon Butte, Killed Woman-Burnt Lodge, Timber Creek, Harpers Ridge, Sixth Point, Devils Creek, Seven Blackfoot Creek, Hell Creek, or the Nelson and McGuire creeks areas.

CMR maps should be carefully studied before taking off on hikes within the refuge. Plan on bringing drinking water, since it's rare throughout the Breaks. Fort Peck Reservoir water is not considered potable, but may be purified with tablets or other means if necessary.—*Jim Liebelt*

# CAP ROCK NATURE TRAIL

**General description:** an easy hike—less than a mile—through pages of geological history

**General location:** Makoshika State Park, four miles south of Glendive

**Map:** Makoshika State Park Road Guide (available this summer at Makoshika State Park; Chamber of Commerce and Frontier Gateway Museum, Glendive, and the Miles City Department of Fish, Wildlife and Parks office)

Photo: Garry Wunderwald
Montana Travel Promotion Unit

"A no man's land of complete desolation," is the description an early park visitor once ascribed to this terrain. And so it seems at first. It's a sudden place. The rolling grasslands of eastern Montana end, and a seemingly endless vista of violent contrasts begins—in a matter of a few feet.

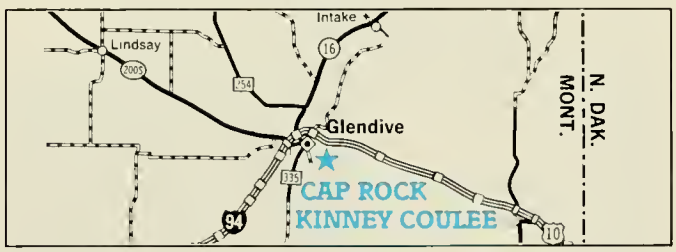
Flayed and tortured rock formations crowd the park road. Scenic vistas survey a marching chaos of free sculpture: battlements, pinnacles, spires, haystack buttes, fluted ridges, and naked strata of geological debris. In cool moonlight, black shadows lace the luminous ridges and the area's stark beauty almost persuades the observer he has been whisked to another planet.

In the Sioux dialect, "Ma-ko-shi-ka" means "bad earth" or "bad land." It's a dry and thirsty land, but water made it what it is. Water formed its rocks in the beds of ancient Cretaceous seas. Water sculpted its rocks, gnawed mazes of steep-walled coulees, dissected valleys, carved buttes, and stripped away its flesh, leaving a sea of jumbled geological skeletons.

Thousands of visitors tour Makoshika State Park each year. Most content themselves with driving the park road and stopping at the scenic overlooks. Only a handful take time to explore the self-guided Cap Rock Nature Trail, an easy .6-mile hike that allows you to tour the open pages in the chronicle of Montana's geological history. It's a place where the hiker can feel at home with ancient and mysterious rhythms, a place that offers a museum of geological complexity and wonder. And there is much more—sinkholes, cap rocks, natural land bridges, coal seams, and a myriad of geological structures to see and touch—a photographer's paradise.

Geology springs to life at every turn of the trail and fires the imagination. Numerous opportunities are there if you pause, close your eyes, and allow yourself to slip back through time. It's a chance to see, with quiet clarity, the size and meaning of this world.

During your hike, refer to the Cap Rock Nature Trail brochure to help you interpret Makoshika's geological richness. Also, note the precautions listed at the end of the description of the "Kinney Coulee Hiking Trail."—*Ken Walcheck, Region 7 (Miles City) information officer*




# KINNEY COULEE HIKING TRAIL

**General description:** a short, but slightly more rugged, hike

**General location:** Makoshika State Park, four miles south of Glendive

**Map:** Makoshika State Park Road Guide (available this summer at Makoshika State Park; Chamber of Commerce and Frontier Gateway Museum, Glendive, and the Miles City Department of Fish, Wildlife and Parks office)

If you are interested in a more rugged hike, consider the Kinney Coulee Hiking Trail just south of the microwave towers at Tower Hill Vista Point. The trail descends 300 feet to the bottom of the badlands. It is not marked beyond the bottom of Kinney Coulee, but you can explore on your own beyond the trail's end.

There are not too many places in Montana where you can take a single step that will span millions of years on the geological calendar. Here, you can. Surrounded by what appears to be an endless maze of broken hills, gullies, hidden chasms, and formations weathered into weird shapes, it's sometimes easy for a hiker to forget that Glendive lies down the road just a few miles.

Hikers can browse through sedimentary strata where scientists hunt big game from the Cretaceous time. Over 10 species of dinosaurs, including the flesh-eating *Tyrannosaurus rex*, have been identified in Makoshika. Every fossil,

even the most common, tells a fascinating story of a menagerie frozen in time.

Every rain, thaw, and puff of dust-laden wind helps reveal another tooth or bone. Makoshika may be one of the finest repositories for mammal fossils in the world, because they occur where they are sure to be revealed. Hikers are reminded that hunting fossils is great sport, but *they are not to be removed from the park.*

To the discerning eye, the "sterile looking" landscape is more than a jumbled pile of rocks. It is a complex ecosystem supporting a variety of plants and animals. Over 200 species of wildflowers have been identified in the park. If you hike there in spring and early summer, you will have a chance to experience this diverse floral display. Hikers frequently see wild animals—from deer to turkey vultures. Less observable animals such as the sand lizard await the patient and skillful eye.

**Precautions for hikers:** This hike and the Cap Rock Nature Trail are considered relatively easy. Hazards exist, however, and hikers should be aware of them. Rattlesnakes are found in the park, so use caution while exploring. The weathered surface of many sedimentary formations is a crumbling, friable material, an inch or more deep, and not to be trusted. Climbing a steep slope can be like walking on a surface strewn with skateboards. It's even more hazardous when wet, about the slipperiness of a wet bar of soap. Sliding on slippery gumbo can result in a nasty spill, so be careful. If you plan on an extended hike, include a canteen of water because water sources are few and far between.—*Ken Walcheck*

# HOLE-IN-THE-WALL

**General description:** a half-mile hike to a long ridge adorned with turretlike structures, with a "window" at one end

**General location:** Missouri River Breaks, downstream from Fort Benton

**Maps:** Bureau of Land Management #1 and #2, Upper Missouri National Wild and Scenic River

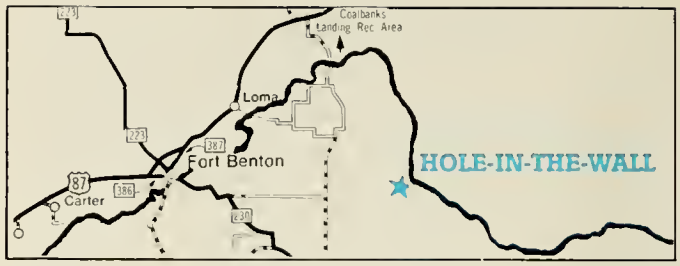
photo: Dave Books

In the Missouri River Breaks country, an easy half-mile hike takes you to a towering vista where the breakaway is complete—away from the discordant sounds of the man-made world and the stifling of fresh thoughts. It's a place where you can take your soul for a long, slow walk, a spot where the natural spectacle can seep into your memory.

It's a place known as Hole-in-the-Wall, a long sedimentary ridge supported by an igneous dike with a "window" at one end, and adorned with turretlike formations. During the late 1800s, it was a steamboat landmark; it is now a Department of Fish, Wildlife and Parks Recreation Area. The site is 21 miles downstream from the Coal Banks Landing Recreation Area, and the only access is from the river. (To reach the Coal Banks site, take U.S. 87 north out of Fort Benton to Milepost 67; turn south and travel for eight miles on a county road.)

Access to the Hole-in-the-Wall Trail is unmarked, but the trail is well-traveled. It begins at a lone cottonwood tree about one-half mile downstream from the campground. It takes 30 to 45 minutes for the average hiker to reach the top of the formation.

After you reach the top, walk to the end of the narrow, leading edge. Look past your toes, straight down at a buck-




skin of a river—a river where the colors of the Lewis and Clark Expedition, steamboats, and other historical events haven't faded very much. As your eyes richochet up, down, east, west, north, or south, you see a wild confusion of honeycombed and pedestaled rocks where centuries of erosion have produced a fantasy of color and shape.

But the geology here is as current as a newspaper and far more sensational. On a rainy day, hikers can actually *hear* erosion—the tumbling of rocks, the rattle of gravel. There are igneous plugs, eagle sandstone, joints and piping, and numerous other features to attract the geological buff.

For wildlife enthusiasts, there are soaring raptors such as red-tailed hawks and prairie falcons, cliff and violet-green swallows, and an occasional mule deer.

To get to the "window," follow an easy trail down the east side of the formation, and then hike up a narrow, steep passageway. It is well worth the effort. Gravity pulls at your soul and distance and time seem without end.

**Precautions for hikers:** Hole-in-the-Wall and the surrounding white cliffs are synonymous with fragility. Composed of soft, sugary sandstone, these "draperies" have been assaulted by wind and water; they are laced with spindly structures which crumble like centuries-old paper. Climbing these structures can be extremely dangerous. Rattlesnakes are also in the area, so use caution while exploring. A canteen of water can also be a handy item to bring along.—*Ken Walcheck*

**The following are sources for the maps mentioned in this article. For most, there is a small charge.**

U.S. Geological Survey, Distribution Section, Federal Center, Building 41; Denver, CO 80225.

Glacier National Park Headquarters; West Glacier, MT 59936. 406/888-5441

Kootenai National Forest, P.O. Box AS, West Highway 2; Libby, MT 59923. 406/293-6211

Flathead National Forest, P.O. Box 147, 1900 Third Ave. E.; Kalispell, MT 59901. 406/755-5401

Deer Lodge National Forest, Federal Building, P.O. Box 400; Butte, MT 59703. 406/723-6561

Bitterroot National Forest, 316 N. Third; Hamilton, MT 59840. 406/363-3131

Lolo National Forest, Building 24, Fort Missoula; Missoula, MT 59801. 406/329-3557

Beaverhead National Forest, 610 N. Montana; Dillon, MT 59725. 406/683-2312

Bureau of Land Management, Public Affairs Office, P.O. Box 30157, Granite Tower; Billings, MT 30157. 406/657-6561

Gallatin National Forest, Box 130, Federal Building; Bozeman, MT 59715. 406/587-5271

Gallatin National Forest, Big Timber Ranger Station; Big Timber, MT 59011.

Custer National Forest, 2602 First Ave. North; Billings, MT 59103. 406/657-6361

Bureau of Land Management, Airport Road, Drawer 1160; Lewistown, MT 59457. 406/538-7461

Bureau of Land Management, Highway 2 West; Glasgow, MT 59230. 406/228-4316

Department of Fish, Wildlife and Parks, Box 430; Miles City, MT 59301. 406/232-4365

# Readers Respond

## Dumb Animals?

• *For years, I have been urging my father, now 82, to set down his more memorable hunting and fishing stories. He is blessed with almost complete recall and relates these tales much as John Alden Knight wrote. I think your readers will enjoy the following account.*—Keith A. Phelps; Missoula, Mont.

As we go about conversing with friends and acquaintances, we often hear the word "dumb" applied to animals, both wild and domestic.

In my years of hunting and observing wildlife, I have seen intelligence displayed by animals that would match a lot of humans, especially when trying to confuse their pursuers. An example of this intelligence was demonstrated while I was fishing on the North Branch of the Susquehanna River near Towanda, in Bradford County, Pennsylvania.

On a beautiful afternoon in late July, I had been fishing wet flies through a long stretch of riffles in hope of latching onto a bass or two. The river at this point was about 100 yards wide and quite shallow, with pockets three or four feet deep. The fish weren't very interested in my offerings, but I was enjoying being out of doors.

For some minutes, I had heard a dog trailing on the west side of the river. As the sound came closer, a nice doe stepped out of the brush below where I was standing. She walked to the edge of the water, took a drink, and looked in the direction of the oncoming dog. I said to myself, "That dog is trailing her and she's going to cross the river and lose it."

The doe started wading across and I continued to fish. When I looked around to check on her progress, there was no deer.

Standing there puzzled, knowing that she hadn't had enough time to disappear, I kept looking downriver. Suddenly, I saw a pair of ears flick above the riffles and disappear again. Shortly, they reappeared, and I realized that while I was fishing she had waded to the middle of the river and had lain down in one of the pockets to fool the dog.

Forgetting about fishing, I watched as a beagle appeared, following the doe's trail to the water's edge. The dog cast about searching for the lost trail. I thought surely it would give up at that point, but it jumped into the river, swam across, and continued to search for the lost trail. It must have covered 200 yards of shoreline in the attempt. Meanwhile, the doe stayed in her pool, lifting her head enough to watch the dog's progress.

Finally the dog gave up, swam the river again, and emerged with its tail between its legs and an attitude that seemed to say, "How did she make a fool out of a smart dog like me?"

The doe watched until the dog was out of sight, got up, shook herself, and walked leisurely to shore and took off in the direction she came from, probably to a waiting fawn.

"Dumb" animals, you say? Not so!—*Miles E. Phelps; Williamsport, Penn.*

### New Recreation Guide Available

I understand you have a publication available, the "Montana Recreation Guide." Please send me a copy.

Over the past several years, we have enjoyed fly-fishing in many of your wonderful streams, particularly in the Missoula and West Yellowstone areas. Even though I am an out-of-stater, you have my full support toward preserving the total fishing experience in a free-flowing river.—*Tom Weston; Westminster, Colo.*

• *A new "Montana Recreation Map" has just been put together by the Parks Division of the Department of Fish, Wildlife and Parks and the Travel Promotion Bureau of the Department of Commerce. The large, fold-out map shows the locations of Fish, Wildlife and Parks, Bureau of Land Management, Forest Service, and National Park Service campgrounds, recreation areas, fishing access sites, monuments, etc. Charts on the reverse side of the map list the name of each site and the facilities available. The map is free from: Parks Division, Department of Fish, Wildlife and Parks, 1420 E. Sixth Ave.; Helena, MT 59620, or Travel Promotion Bureau, Department of Commerce, 1424 Ninth Ave.; Helena, MT 59620.* —Ed.

UP.

That's where our subscription price goes on July 1.
To keep your costs DOWN, subscribe or renew now.

### Memories Rekindled

I have requested that you bill me for a two-year subscription to *Montana Outdoors*. I've hunted Montana for the past three years and I felt that subscribing to your magazine would rekindle all of the fond memories I have of hunting in your great state.

I'm looking forward to the first issue.—*Brad Allen; Bangor, Maine*

### Good Wildlife Management

I was overwhelmed by your beautiful state. The abundance of game was such a thrill. Being fortunate enough to fill my bear tag was just an added bonus. The cost and good judgment involved in wildlife management make it a very difficult job. Keep up the good work. I hope the day will come when I can come back for another hunt.

Enclosed is money for a subscription to your magazine. That will have to do until I return.—*Albert Stewart; Henderson, Nev.*

### Unmatched Wild Beauty

I was born in upstate New York and I thought I had seen wild beauty. That was until I started dating a man from Havre, Mont., and he took me home to meet his parents. With him, I walked through the fresh, green forests of the towering Rockies and met people whose friendliness is unmatched anywhere. Even though we've married and temporarily moved to Virginia, Montana hasn't been far away since my in-laws gave us a subscription to *Montana Outdoors* last Christmas.

Its photographs more than capture the untamed essence of that beautiful state. The animals, mountains, and Big Sky come alive in every article and photo. *Montana Outdoors* shows me places I have yet to see and things I

have yet to learn about the state I now call "home."

I especially enjoyed the Jan./Feb. 1983 photo layout. It brought back fond memories and gave me visions of places to see when we return to the Big Sky country.—*Mrs. Sandra Gomke; Norfolk, Va.*

## Tribute to Bill Simpson

These few words are a tribute to a fly fisherman, a friend of mine, and a friend of the Montana Fish and Game. They are written because he can no longer fish the Boulder, Little Blackfoot, Blackfoot, the Clark Fork near Garrison, and countless other rivers and creeks of Montana.

This is a tribute to Bill Simpson—whose fishing was solely fly-fishing because he claims he knows too much about bait fishing to get into a beginner's class and so little he's ashamed to try the advanced class.

Why a tribute? Because Bill loves Montana as much as any man I ever met. He loves fishing there. He loves youngsters, and when he got the chance, he loved to teach them to fish. Since he can no longer fish, I'm sure he has given his equipment to youngsters who will care for it and use it wisely. He regrets he can no longer fish and even more hates not being able to send in to Fish and Game his correctly made out logs of catches.

Too, Bill understands water. Since he spent almost all of his life in and around Helena, Livingston, and Missoula, he knows trout water.

This writer lived in Montana for over 20 years and was fortunate enough to fish some of the bigger rivers and streams with some nationally known fishermen. I was also lucky enough to fish with several equally good local fishermen. If you leave out extremely long casting, which I never saw him do, Bill Simpson had no superiors and darned few peers. He could put a fly nearer the exact spot it should be—even in a bad wind—than anyone I've ever seen. And he did it almost every time with no more than one false cast.

He is a master fly fisherman.

Further, Bill always did it right. He got permission to fish. He offered to share his catch with those who gave him permission to fish. He never destroyed or damaged property in any way or littered. He always obeyed laws and limits.

I wish Bill and I could spend one more day this year fishing the lower Boulder River. Regardless, I'll never forget those days we spent there, and I'm certain he recalls them too. So today I raise my glass, in memory of those lovely summer days in Montana, with these words: "Here's to you, Bill Simpson, from this glass filled with the true wine of the country—water—to represent the clear, cold, white, bubbling Montana trout waters." Yes, Bill, here's to you and to all of the many trout fishermen in Montana who believe as you do.—*Lyn Chance; Saucier, Miss.*

## Satisfied Subscriber

My fond memories of past visits to Montana lead me to contemplate the future. Future thoughts are greatly enhanced with each new issue of *Montana Outdoors* and the added thought that I will return for another visit in the near future.

Needless to say, I am a satisfied subscriber. I find your mix of feature articles, photographs, and current newsworthy items to be just right. To the people responsible for putting together this thoroughly enjoyable magazine, I would like to say thank you.—*Jerry Wamsley; Anchorage, Alaska*

## A Rare Opportunity

Although this may not be unusual in and about this area, it was the first time we had the rare opportunity to view an American bald eagle from a distance of about 50 yards. We live approximately one-quarter mile west of the Butte Water Co. pumping station, and alongside the Big Hole River.

On the morning of March 26, about 8 a.m., there perched on a rock in mid-river was a majestic bald eagle. He kept cocking his head sideways and watching the river flow by. We viewed him for about 10 minutes before he soared away and we had the opportunity to compare him with the Nov./Dec. 1982 *Montana Outdoors* picture. It was a perfect replica of the bald eagle as photographed by Gary Strobel and found on your back cover.

We usually see eagles hovering high above the river in search of food and rarely do we see them as low as this one. We assume some of the eagles we see are goldens, although even with binoculars, it's hard to distinguish their color. Sometimes we are sure we note the white spread of the tail and the white neck portion, and we know we are viewing a bald eagle. The one we saw March 26 was indeed a bald eagle.—*Mr. and Mrs. Claude E. Sampson; Divide, Mont.*

## Wishes From Sweden

Every issue of *Montana Outdoors* makes me feel so good, thinking back to 1974 when I had a very pleasant stay in the Big Sky country.

Please keep up your fine work with the magazine, and my very best overseas wishes.—*Paul Vighagen; Horby, Sweden*

# Big Game Drawings—Questions and Answers

• *One of the things that hunters are most interested in is the special drawings. We printed some of the most common questions and answers in the May/June 1982 issue. It was well-received, and we have had numerous requests to repeat the article. We have updated the information, and believe it will answer many of your questions.* —Ed.

**Q:** In the past, I always seemed to draw more licenses. It has now been three years since I drew one. Why?

**A:** Two things influence the success rate of applicants in the drawings: (1) the number of licenses issued, and (2) the number of people who apply.

The following table shows the increase in all applications received by the Department of Fish, Wildlife and Parks for the special drawings in previous years. There is an average of a 16% increase per year.

| RESIDENT AND NONRESIDENT APPLICATIONS FOR ALL SPECIES | |
|---|---|
| 1979 | 111,000 |
| 1980 | 121,000 |
| 1981 | 135,000 |
| 1982 | 180,000 |

To follow success rates, it is necessary to look at each species individually.

The number of antelope applicants has remained fairly constant over the last 10 years. The number of licenses issued has fluctuated, depending on the numbers of antelope available. Around 1978, antelope populations

dropped substantially, causing a reduction in the number of available licenses. Antelope populations appear to be recovering and more permits are once again being issued.

Interest in special elk permits has increased dramatically in the last six years. In 1976, approximately 25,000 hunters applied for elk permits; by 1982, this figure had risen to over 60,000. The success rate in the elk drawings is now fairly low in many districts. In several districts, the probability of drawing a permit is now well under 10%.

In the moose, sheep, and goat drawings, the number of applicants has increased in a slow but steady trend for the last 10 years. Interest in these licenses is so intense, compared with the number of permits available, that drawing a permit in any district is difficult.

**Q.** We apply for the drawings by the June 15 deadline, yet the drawings are not conducted until late August. Why does this take so long?

**A:** In 1982, the Special License Section received over 100,000 applications (some for more than one species) for the drawings. Each one of these has to be opened and checked and the money counted and balanced. In addition, applicants who enter as a party must be matched and applications with mistakes must be processed. When the processing is completed, information about all applicants must be entered into the computer.

Because of the number of applications received, this process takes about two months.

During August, the Fish and Game Commission meets to set the final harvest quotas based on the latest game information. As soon as the quotas are finalized, they are entered into the computer, and the drawings are conducted.

The actual drawings are accomplished relatively quickly. The majority of our time is spent entering the applicants' data into the computer.

**Q:** Why was my application rejected from the drawings?

**A:** There are a variety of reasons, and the following are the most common:

1. *The applicant fails to supply the required information at the top of the application.* Five items are required on the resident application—(1) name and address, (2) date of birth, (3) conservation license number, (4) hunter safety number, if applicable, and (5) signature. These items are either required by law or are essential in order to mail a license to the applicant.

2. *Money problems.* The applicant either forgets to include money or miscalculates and submits less than the required amount. Applications are also submitted with checks which do not clear the bank.

3. *Applications too late.* Applications must be postmarked by June 15; applications postmarked after this date cannot be accepted.

In addition to these most common errors, some applications contain mistakes which prevent the application from being entered in the drawing for a single species. This kind of mistake usually results from an applicant misreading a district number. For example, the hunter could be picking a deer area while looking at an antelope map. However, if a hunter uses an incorrect district number for one species, he will still be entered in the drawings for any other species for which he correctly applied.

**Q:** I know of a man and his wife who both received a sheep permit in the same district. How does this happen?

**A:** Success generally averages less than 5% in moose, sheep, and goat drawings. In a purely random drawing, it would be somewhat rare for members of the same family to be successful.

However, the preference system has made this much more likely. When the system was begun in 1973, many family groups applied at the same time and in the same district. They have continued to apply each year and have acquired numerous years of preference. If, for example, the family members have eight years of preference and they all apply in the same district, it is very likely that several of their names will be drawn.

The preference system is now being phased out and the 1983 hunting season is the last season for which preference may be applied. After that, all applicants will be drawn randomly. This will substantially reduce the chance of successful applicants coming from the same family.

**Q:** I had landowner's preference in the last drawing. Why didn't I receive a permit?

**A:** Landowner preference simply means that qualified landowners will receive up to 15% of the deer and antelope permits or licenses for a district.

For example, if there are 100 available antelope licenses in a district, 15 will be available to holders of landowner preference. If 18 landowners apply, only 15 of them will be selected. The three who are unsuccessful will then be entered in the regular drawing for that district, along with the other applicants. They will, therefore, have a second chance to draw a permit. In recent years, increased hunter interest and reduced license numbers in some districts have combined to produce more successful landowner applicants.

**Q:** What are my chances of success in the various drawings?

**A:** Generalizing about the probability of drawing a license for a species is difficult, since the probability varies widely from district to district. In some special elk districts, the probability of drawing a permit is about 2%; in others, everybody who applies for the district as a first choice receives a permit.

Statewide, there are sometimes more licenses (e.g., Deer B, nonresident Deer A) available than there are applicants. This gives a probability for success of 100%. However, in many popular districts, there are many more applicants than licenses and thus many applicants are unsuccessful.

Even with these shortcomings, it is possible to obtain a general picture of the chance for success by looking at statewide results. The following chart has been prepared from results of the 1982 drawings for licenses. In future years, both the number of licenses offered in each district and the number of persons applying will vary.—*Jim Herman, chief, License Bureau*

## 1982 DRAWINGS FOR LICENSES

| Species | Number of licenses or permits issued | Number of applicants | % probability of drawing |
|---|---|---|---|
| Antelope | 25,051 | 43,588 | 57% |
| Deer B | 16,895 | 21,007 | 80% |
| Special deer | 3,659 | 7,679 | 47% |
| Special elk | 13,550 | 64,775 | 20% |
| Sheep | 252 | 6,741 | 3% |
| Goat | 338 | 5,918 | 5% |
| Moose | 577 | 18,223 | 3% |
| Deer A (nonresident) | 1,114 | 1,186 | 93% |

# Contributors

• "In what could be loosely referred to as the pugilistic world of fish and fishermen, his reputation is one of class and character. We've all heard the 'pound-for-pound' theories of his fighting qualities. We agree with them, down to our broken lines and thrown lures." Who is this fish? The smallmouth bass is who. Yet, according to department records, smallmouth make up only one-fourth of one percent of the total statewide catch. After you read **Ken Walcheck's** article, you'll wonder why. Anyone who has tangled with him, thrilled to his frantic runs and occasional jumps, seen his speed as he runs with the lure, or battled his strength as he bored deep and resisted the curving rod, will stoutly maintain that no finer game fish of his size exists anywhere. The "Bronzeback Brawler" is a stubborn fighter, strong and unyielding. Turn to Walcheck's article on page 2. He has been with the Department of Fish, Wildlife and Parks for over 10 years, as information officer for the Miles City Region.

• Rabies is at least occasionally present in any ecological system that includes mammals, but in man, it is mercifully rare. Still, it is "The Unkindest Bite of All." The incubation time is of uncertain length. The anti-rabies vaccines are painful and sometimes have serious and disabling side effects. If the vaccines fail and symptoms continue to develop, an unimaginably horrible death is certain. As **G. Wesley Burnett** and **Lisa Mathis Butler** point out, rabies will be "out there" for a long time. Its potential dangers can be reduced by awareness of the disease, its signals, and appropriate precautions. Turn to their article on page 6. Burnett, formerly with the department's Parks Division, is an assistant professor of recreation and park administration at Clemson University in Clemson, S.C. Butler did her undergraduate work in park administration at Colorado State University, Fort Collins, and received her first graduate degree in recreation and park administration from Clemson. She is a doctoral student in geography at the University of Oklahoma.

• "All Fishes Great and Small" is unlike most fish stories. It's about a big one that didn't get away: Pat Kelly's 30-pound, 4-ounce, cutthroat-rainbow cross that broke not only Montana's record but also the All Tackle World Record. It's about a new state record listing that was so "big" it fit into a sandwich bag. The new listing was for pygmy whitefish and the lunker that took all the honors weighed .16 of a pound, had a 4.2-inch girth, and measured 8.8 inches long. Orlin Iverson's name and his record pygmy whitefish have been added to Montana's "1982 Fishing Records Summary." For a behind-the-scenes peek at these record fish stories, turn to **Mike Aderhold's** article on page 29. Aderhold has been the department's information officer for the Kalispell area since 1980.

• Brown, almost as big as a hawk or a chicken. Long legs, long necks. But the longest thing about them is their bills. Half-a-foot long and curved downward. **Tom Butts** is describing the "Shorebird of the Prairie," the long-billed curlew. Once abundant throughout the West, they fell victim to plowing and farming which destroyed their dryland prairie habitat, and also to market and sport hunters attracted by their delicate flesh and sporting behavior. Today, they inhabit large areas of the country from North Dakota westward, including the southern parts of Saskatchewan and Alberta, into California and south to Texas. They are somewhat common in prairie areas of Montana, but their future is by no means secure, largely because sufficient information is not available to determine their status. Butts works in Roundup as a biologist for the department's Wildlife Division. Turn to his article on page 34.

• Because our world is sophisticated, competitive, and ego-centered, we are usually impressed only by things bigger, louder, faster, or more powerful than ourselves. Take a moment to read "The Emerald City of Moss." You will be just as impressed—and perhaps deeply inspired—by this story of something smaller, quieter, and more frail. "Moss" is *not* the scummy stuff floating on a quiet pond; nor is it the greenish scale on trees or rocks. Instead, it is the thick, green mat on the ground, on a fallen tree, or on a rock. And how it has managed to survive for over 500 million years makes for a fascinating tale. Turn to **Paul R. Pacini's** article on page 36. Pacini is an outdoor recreation planner with the department's Parks Division. He formerly served as a warden in the Law Enforcement Division; before joining the department, he taught high school biology for two years.

• Special thanks to the following photographers whose work appears in this issue: **Dr. Reuben A. Diettert**, Missoula; **Larry Eaton**, Billings; **Bill McRae**, Fairfield; **Alan Nelson**, Great Falls, and **Steve Wirt**, Whitefish, and to department employees **Kristi DuBois** and **George B. Kirsch**.

# Book Reviews

**NORTH AMERICAN WILD GAME COOKBOOK**, by Bill and Anita Mabbutt, Solstice Press, P.O. Box 9223; Moscow, Idaho 83843, 1982, 212 pages, $9.95, paper.

Tired of elk steak? This fall, when you or your family hunter comes home from the hills with a huge smile of success, you'll be able to add some variety to the wild game menu.

"Venison Spareribs with Apricot Glaze," "Duck in Wine-Mushroom Sauce," "Roast Grouse with Almonds," and other imaginative and tasty dishes are included in the "North American Wild Game Cookbook." The cookbook was published to coincide with National Hunting & Fishing Day, 1982.

Including recipes for elk, bear, moose, duck, quail, pheasant, squirrel, rattlesnake, and other common and uncommon game species, the cookbook is the result of decades of experimentation with wild game cookery. The Mabbutts, native Idahoans who now make their home in Boise, maintain a hunting lodge in Idaho's Panhandle and are lifelong hunters and conservationists who believe that any game worth taking is worth eating.

"Eating wild game should be a treat," said Anita, "but all too often the wild meats come to the table too tough or 'gamey' for most people. There's no reason why this has to be the case."

At their annual wild game feasts in which they serve up to 500 people with a lavish array of wild foods, the Mabbutts demonstrate that wild game can be delicious, if properly prepared. Celebrities such as Robert Redford and Burl Ives have eaten their cuisine, and they also catered a National Lieutenant Governors' Conference a few years ago. According to the Mabbutts, Redford's favorite dish was "Smoked Wild Duck" served with a "Hot Mustard" sauce. Both recipes have proved so popular that they're included in the book. "Watch out for that hot mustard, though," cautioned Bill, "it's spicy enough to curl your tonsils."

The "North American Wild Game Cookbook" is presented in an attractive and functional format. Measuring 7 by 10 inches, it contains over 200 recipes, as well as a handy chart of suitable substitutions.

## GREAT FISH

Pat Kelly with world record cutthroat-rainbow cross (DFWP photo: Mike Aderhold)

# ALL FISHES GREAT and SMALL

### by Mike Aderhold

Sunday, May 16, 1982, was a day Pat Kelly will never forget. While fishing for kokanee in Ashley Lake west of Kalispell, he hooked a world record cutthroat-rainbow cross.

The fish weighed 30 pounds, 4 ounces, and broke the All Tackle Record of 19 pounds, 3 ounces, set in January 1974 with a cross caught in Pyramid Lake, Nev. The former Montana record, also from Ashley Lake, weighed 17 pounds, 10 ounces, and was caught in 1973 by R. A. Rousselle.

Pat, 29, born and reared in Kalispell, works at the Plum Creek Lumber Mill north of town and is a veteran angler. He has been hooked on the sport since he was 11 and Pat and Merry, his wife, agree that fishing is their favorite summer recreation. A year earlier to the day, Pat caught a 15-pound, 2-ounce hybrid in Ashley Lake, and looking at the mounted fish on his wall all winter, he dreamed of getting a bigger one in the spring.

With four buddies and two boats, Pat and his group set out a little after 10 a.m. to catch salmon. Fishing the deep west end of the 3,244-acre lake, Pat started trolling deep with lead shot and cowbells. After one pass, he put on a fluorescent salmon hook and moved into shallower water, then changed to a #5 green flatfish. Finally, he added a worm. The sun, moon, and stars were right . . . the lure, bait, and hook combination worked . . . the cast was true, the fish was there ready to bite, and "luck shined through."

Pat had 8-pound test line on, so he had to be very careful. Several times he played the fish close to the boat, only to have it make another run. After nearly an hour, the fish tired, and he was again able to bring it close to the boat. The net was too small and Pat's partners didn't have a gaff, so there was a breath-holding moment when a gill cover was grabbed. The fish was successfully boated, although Pat recalls at this point his heartbeat had tripled.

All five fishermen knew the fish was unusual. They took Instamatic pictures and showed the fish to some of the lakeshore cabin owners and others who had been fishing that morning. They weighed it on a small hand scale—36 pounds!

After a little more visiting, Pat and one of his friends drove 26 miles to Kalispell to have the fish officially weighed. They took it to two grocery stores, the sheriff's office, and finally got together at a sporting goods store with department fisheries biologist Bob Domrose who measured and officially weighed the fish, about two hours after it had been caught.

The path to official recognition was not easy. On May 2, 1981, an 18-pound, 8-ounce, hybrid from Ashley Lake was submitted for a state record. After receiving considerable local publicity, department officials found the fish was illegally taken by an unlicensed juvenile from a creek closed because of fish spawning activities.

Verification of Pat's 30-pounder fell to Warden Sgt. Floyd Thomas who had also checked the 18-pound fish in 1981 and ended up citing the violator. He had a long visit with Pat, and later checked individually with the rest of the party and with other anglers who were on the lake or had seen the fish shortly after it had been caught. Floyd also personally looked the fish over, later checking with the taxidermist on the condition of the carcass, and backtracking the route taken to have the fish identified and officially weighed.

Never in the history of Montana's record fish list has a catch been so thoroughly investigated. There is no doubt about the record's authenticity. Credit is due Pat Kelly for his patience and forbearance in enduring the department's review.

Once the record was accepted by the department, Kelly, Domrose, and Thomas completed application for the world record through the National Fresh Water Fishing Hall of Fame in Hayward, Wis. (see inset article). They also submitted 25 feet of the line used to catch the big fish. On Oct. 18, 1982, Pat Kelly's fish was officially accepted as the 8-Pound Line Class World Record and the new All Tackle World Record. Pat now has the official documents, a scrapbook of news clippings and photos, and a beautifully mounted fish.

The record fish was 35¾ inches long, with a girth of 27½ inches. Several scales were taken and read independently by four biologists. They determined the fish was 7 years old, about to start its eighth season. The fish was a female, but her ovaries did not appear to have been active the spring she was caught.

In fall 1980, researcher Stevan R. Phelps performed a genetic analysis on 44 Ashley Lake hybrids at the University of Montana Zoology Department. On the average, the sample was a trihybrid mixture of 55% rainbow, 40% Yellowstone cutthroat, and 5% westslope cutthroat trout. Some of the individuals in the sample contained genetic characteristics of all three species, while others showed characteristics of only two species. The sample showed a high degree of genetic variation, indicating extensive hybridization.

Department fisheries biologists Dom-

# 1982 FISHING RECORDS SUMMARY

The only Montana record broken in 1982 was for rainbow-cutthroat hybrid—but that record has been officially recognized as a world record cutthroat-rainbow cross by the National Fresh Water Fishing Hall of Fame (see article). In addition, information on the record-breaking drum received too late for the 1981 list has been included, and pygmy whitefish has been added to the "Fishing Records Summary."

To be included on the state records list, the Department of Fish, Wildlife and Parks requires that the fish (1) be legally harvested, (2) be weighed on an inspected scale (most grocery store scales are certified and inspected), and (3) be positively identified. To maintain the list's integrity and to protect current record holders, we ask that a record fish be documented and verified by department personnel *whenever possible.* If a department employee is unavailable, the angler must present a photograph from which the fish can be properly identified; however, identification by photograph is difficult with some species. If the fish is not weighed by department personnel, the angler must also present an affidavit from the store where it was weighed.

| Species | Weight lbs. | Weight ozs. | Angler | Year | Location |
|---|---|---|---|---|---|
| Arctic grayling | 2 | 10 | Mark Daniels | 1974 | Handkerchief Lake |
| Bigmouth buffalo | 32 | 6 | Gary Lundman | 1979 | Missouri River (Slippery Ann Game Station) |
| Black bullhead | 1 | 11 | Mike Mitchell | 1977 | Horse Creek (McCone Co.) |
| Black crappie | 3 | 2 | Al Elser | 1973 | Tongue River Reservoir |
| Bluegill | 2 | 8 | George Schlosser | 1967 | Dengel Reservoir |
| Brook trout | 9 | 1 | John R. Cook | 1940 | Lower Two Medicine Lake |
| Brown trout | 29 | 0 | E. H. "Peck" Bacon | 1966 | Wade Lake |
| Bull trout | 25 | 10 | James Hyer | 1916 | Unknown |
| Burbot (ling) | 13 | 4 | Paul Keller, Ernie Schutt | 1980 | Missouri River (below Fort Peck Dam) |
| Carp | 31 | 8 | Buster Barbee | 1980 | Petrolia Reservoir |
| Channel catfish | 23 | 4 | Larry Hamilton | 1980 | Milk River |
| Coho salmon | 4 | 14 | Irven Stohl | 1973 | Fort Peck Reservoir |
| Cutthroat trout | 16 | 0 | William D. Sands | 1955 | Red Eagle Lake |
| **Freshwater drum*** | **13** | **12** | **Kelly Monson, Mike Garten** | **1981** | **Milk River (near Vandalia Dam)** |
| Golden trout | 2 | 9 | Raymond D. Gallik | 1975 | Lightning Lake |
| Goldeye | 2 | 9 | Lester Estenson | 1977 | Nelson Reservoir |
| King salmon (chinook) | 4 | 7 | Barry Gillis | 1972 | Missouri River |
| Kokanee (salmon) | 5 | 15 | Forrest Johnson | 1976 | Pishkun Reservoir |
| Lake trout | 42 | 0 | Dave Larson | 1979 | Flathead Lake (east shore) |
| Lake whitefish | 5 | 8 | James Sellen | 1981 | Echo Lake |
| Largemouth bass | 7 | 8 | Bruce Blahnik | 1980 | Kicking Horse Reservoir |
| Mountain whitefish | 4 | 9¾ | Mike Hangas | 1977 | Blackfoot River |
| Northern pike | 37 | 8 | Lance Moyler | 1972 | Tongue River Reservoir |
| Northern squawfish | 6 | 10 | Rick Norris | 1979 | Flathead Lake (Polson Bridge) |
| Paddlefish | 142 | 8 | Larry Branstetter | 1973 | Missouri River |
| Pallid sturgeon | 60 | 0 | Gene Sattler | 1979 | Yellowstone River |
| **Pygmy whitefish***** | **0.16** | | **Orlin Iverson** | **1982** | **Ashley Lake** |
| Rainbow trout | 20 | 0 | C. J. Brohaugh | 1952 | Cliff Lake |
| **Rainbow-cutthroat hybrid**** | **30** | **4** | **Pat Kelly** | **1982** | **Ashley Lake** |
| Sauger | 7 | 2 | Raymond V. Johnston | 1975 | Tongue River Reservoir |
| Shortnose gar | 3 | 1 | John Johnson | 1977 | Fort Peck Dredge Cuts |
| Shovelnose sturgeon | 12 | 12 | Troy Sidewell | 1978 | Marias River at Loma |
| Smallmouth bass | 4 | 11½ | Bob Higson | 1975 | Horseshoe Lake |
| Smallmouth buffalo | 9 | 4 | Mac McKinney | 1977 | Hauser Lake (west side) |
| Walleye | 14 | 0 | Nell Berg | 1974 | Nelson Reservoir |
| White crappie | 2 | 2 | Drew Jackson | 1978 | Tongue River Reservoir |
| White sturgeon | 96 | 0 | Herb Stout | 1968 | Kootenai River |
| White sucker | 4 | 5 | Fred Perry | 1981 | Nelson Reservoir |
| Yellow perch | 2 | 0 | Gerald Pottratz | 1974 | Nelson Reservoir |

*New Montana record for 1981.

**New Montana record for 1982.

***New species added to Montana record list.

rose and Joe Huston, each with more than 20 years of fisheries experience in northwestern Montana, believe—but cannot prove—that the Ashley Lake hybrids originated from the Washoe Park Trout Hatchery in Anaconda. In the early days of trout culture, a fish that grew fast and did well in the hatchery was the goal. Early hatchery workers were not as fussy about keeping the genetic strains pure as they are today.

Traditionally, most of the Anaconda brood stock has come from Georgetown Lake. For decades, this lake has had rainbow and Yellowstone cutthroat, and originally probably had some westslope cutthroat from the Flint Creek drainage. Most of the cultured Yellowstone cutthroat stock originally came from Yellowstone Lake in Yellowstone National Park. Almost all of the cultured rainbows originated from the Shasta River system in northern California, where the first rainbow hatchery was set up in the late 1800s.

The Ashley Lake stocking record on file in Kalispell goes back to 1924, and it is possible the lake was stocked earlier. Both Yellowstone cutthroat and rainbows can grow fast, to over 10 pounds, if they have adequate forage.

Kokanee salmon were first introduced into Ashley Lake in June 1951. For years, they have been too many and too small, and now average around 10 inches. Kokanee probably provide the food that allows a few big fish to develop.

Most of these hybrids appear to be fertile and they spawn in four small creeks at the west end of the lake. These creeks are closed to fishing and in the spring are patrolled by department personnel and protected by area residents. Last year, there were fewer than 60 spawners, all in the 3- to 15-pound range. For the last three years, a few eggs have been taken and raised at the Flathead Lake Salmon Hatchery in Somers and experimentally stocked back into Ashley Lake.

It is hard to catch a trout weighing over 10 pounds in Ashley Lake—fewer than a dozen are documented each year. In over three decades of checking the fish in the lake and watching the spawning creeks, the department has never documented one over 19 pounds; that just makes Pat Kelly's catch all the more unusual. His record may last forever. Then again, it might not.

## SMALL FISH

It happened in March when cabin fever usually sets in.

## WHERE GREAT FISH RECORDS RESIDE

The National Fresh Water Fishing Hall of Fame has the last and latest word when it comes to North American fishing records.

Founded in 1960, the organization is a nonprofit, educational foundation dedicated to the conservation and sport of fishing. It is supported entirely by voluntary public donations.

The Hall of Fame maintains a record list for more than 100 North American and 25 foreign fresh water species. Records are listed in all-tackle and over a dozen line class categories, and by type of angling, e.g., casting, fly-fishing, ice fishing, etc.

The organization annually publishes a book with more than 60 pages listing all of its records, plus the fishing records of all 50 states. The publication is available for $2.50 U.S. or $4 foreign. Membership in the organization costs $12 U.S. and $20 foreign, and includes a calendar, annual record book, newsletter, patch, and a pass to the Hayward, Wis., museum. For more information, contact: National Fresh Water Fishing Hall of Fame, Box 33; Hayward, WI 54843 (715/634-4440).

Kalispell pharmacist Ed Kennedy walked through the front door of the Region One Fish, Wildlife and Parks office with a 6-inch fish in a sandwich bag and asked with a straight face if he could submit it for consideration as a new state fishing record. What?

He had caught the fish in Ashley Lake two days before on a hook and line, using a maggot as bait. He was legally licensed and the fish had been accurately weighed on a certified scale and properly witnessed.

According to Montana law, all species of the family Salmonidae (chars, trouts, salmon, grayling, and whitefishes) are "game fishes," and Ed held the only game fish for which there was no record listing. His pygmy whitefish weighed .07 of a pound (32 grams), was 5.9 inches long, and had a girth of 2.8 inches.

Well, why not? The fish was checked, and the necessary information sent to Helena. A week later, Ed received an official certificate of recognition from the director of the Montana Department of Fish, Wildlife and Parks. Montana had a new species listed on its fishing record, and out went the news releases.

A couple of Flathead Valley weekly papers had fun extolling Ed's great skill, amazing luck, and good fortune, and the local radio stations picked up on it.

On April Fool's Day, Harry Woll, a farmer southeast of Kalispell, brought in a pygmy whitefish that tied the record. Harry caught his fish in Bitterroot Lake, about six miles southwest of Ashley Lake. The fish was a full inch longer than Ed's, but since Montana records are judged only on weight, Harry had to settle for a tie.

Eight days later, Orlin Iverson, a tree thinner also from Kalispell, smashed the pygmy whitefish record with a lunker that weighed .16 of a pound (72 grams). He nabbed it in Ashley Lake

Orlin Iverson with record pygmy whitefish (DFWP photo: Mike Aderhold)

while he was fishing for perch. Orlin's fish was 8.8 inches long, with a 4.2-inch girth.

The pygmy whitefish, *Prosopium coulteri*, considered a glacial relic, was first documented in Montana in 1932 from tributaries of Lake McDonald in Glacier National Park. It also has been collected from Flathead, Ashley, Swan, Seeley, Bull (south of Troy), and Bitterroot lakes and is undoubtedly present in many other glacially formed lakes in western Montana.

The pygmy whitefish can be distinguished from mountain whitefish and Lake Superior whitefish by small size, large scales for its size, almost cylindrical shape, blunt snout, overhanging mouth, and a single flap of skin between nostrils.

The largest pygmy whitefish documented in Montana was caught Nov. 15, 1980, by fisheries biologist Bob Domrose while he was surveying Bitterroot Lake with a gill net. The 5-year-old-female weighed .23 pounds (103 grams) and was 8½ inches long. The largest specimen known to science was 10.7 inches long and was taken from Maclure Lake, British Columbia, in 1965.■

## *Department Lands:*

# SAVOR THE SUMMER-

DFWP photo: Dan Becker

Dedicated in September 1982, Black Sandy State Recreation Area (SRA) is one of the newest additions to Montana's State Park System. Montana Power Co. donated a 50-year lease on slightly over nine acres of lake frontage to make Black Sandy SRA possible. Located on the Missouri River's Hauser Reservoir just 15 miles from Helena, Black Sandy is expected to attract nearly 15,000 visitors per year.

# —VISIT A PARK

Like many of Montana's state parks and recreation areas, Black Sandy SRA offers a variety of outdoor recreational opportunities—fishing, camping, picnicking, boating, water skiing, and even the chance to mine sapphires. Interpretation of natural, historic, and archaeological points of interest is an important aspect of this and other parks in the state's system. An overnight camping fee of $2 or $3 is charged at some state facilities like Black Sandy, but day use is always free. Enjoy Montana. Savor the summer by visiting a park (all photos by Paul R. Pacini, unless otherwise credited).

DFWP photo: Dan Becker

# Shorebird of the Prairie

photo: Alan Nelson

by Tom Butts

MY FARMER friend and I were drinking coffee one June afternoon when he remarked: "Yesterday I was out on the tractor and I saw a couple of the darndest birds I ever laid eyes on. Sort of brown, and near as big as a hawk or a chicken. They had long legs and long necks. But the longest thing about them was their bills. They must have been more than half-a-foot long and curved downward. They were making quite a ruckus all morning. What do you suppose they were, anyway?"

My friend had crossed paths with a pair of the largest shorebirds in North America. Named for their absurdly long bill and their loud cry of "cur-lee?" the long-billed curlew *(Numenius americanus)* can be seen on both sides of the Continental Divide in Montana, wherever extensive short-grass prairie is found. Although a shorebird of the sandpiper family, the long-billed curlew, or sicklebill, will rarely be seen near a shoreline in Montana, except during migration.

Long-billed curlews are large birds, 20 to 26 inches long (including bill), and weighing up to two pounds. Their wingspan is from 36 to 40 inches. The female is larger than the male, and her bill is longer, too—up to nine inches long, with a more pronounced curve near the tip. Long-billed curlews are basically tan, with dark speckling on the back and a buff- to cinnamon-colored breast. The undersides of the wings are bright pink-cinnamon.

Observers could possibly confuse two birds with the long-billed curlew: The whimbrel has a prominent, dark stripe through its eye and another above the eye and is not found in Montana; the marbled godwit is somewhat smaller, more lightly colored, and its bill turns up rather than down.

While on the breeding grounds, curlews eat primarily grasshoppers, beetles, caterpillars, spiders, worms, and possibly a hapless mouse or toad on occasion. While migrating and on the wintering grounds, they feed along shorelines, catching crayfish, worms, snails, and frogs.

On June 22, 1805, near Great Falls, Capt. Meriwether Lewis noted in his journal: "Saw . . . quantities of little birds and the large Brown Curloo; the latter is now setting . . . ." On March 5, 1806, he referred to the ". . . large Brown Curloo so common to the plains of the Missouri (River) . . . ."

Long-billed curlews were once abundant throughout the West, nesting as far east as Michigan and Illinois. They wintered in California, along the Gulf Coast, and on the East Coast, occasionally as far north as New England. Sought by market hunters and sport hunters for their delicate flesh and sporting behavior, their numbers dwindled. Plowing and farming of the dryland prairies where they nested hastened their decline. By the early 1900s, they had been exterminated from vast areas of the West.

Today, they are scattered from North Dakota westward, including the southern portions of Saskatchewan and Alberta, into California and south to Texas. They are somewhat common in prairie areas in Montana, but their future is by no means secure.

In her monograph on the long-billed curlew, Julia Allen wrote: "For the foreseeable future, lack of habitat protection threatens the survival of the long-billed curlew. Apparently, in response to this situation, the U.S. Department of the Interior has categorized the long-billed curlew as 'status undetermined,' which means that it has been suggested as possibly threatened with extinction but sufficient information is not available to determine its status. More information is needed."

Male curlews arrive in Montana in March, while patches of snow still linger on the prairie. Females arrive a week or so later, and courtship begins. Males establish territories and defend them against intruders. Both sexes participate in rather elaborate courtship rituals that include scratching the ground bare in several locations, then tossing nest material into several scrapes, while the female wanders about checking out each site. Finally, she picks one, and finishes lining it with twigs, grasses, rabbit droppings, and whatever else is available. The nest is often near a pile of dried cow manure, apparently to disguise the nest.

Eggs are laid on alternate days until a clutch of four, or sometimes five, is laid. The eggs are buff to olive, occasionally pale blue, with dark brown splotches. Both sexes incubate the eggs, the female during the day and the male at night. If a magpie or fox destroys the nest, the pair will not renest. Incubation takes 27 to 28 days.

The chicks are covered with buff down, and have a short, straight bill. They leave the nest shortly after hatching and grow rapidly, on a diet of grasshoppers, beetles, caterpillars, and other insects. They are quite independent, ranging far from their parents.

When a potential predator approaches the brood, the parents put on a wild display, attracting other adult curlews in the vicinity. To lure the intruder away, the female will often feign injury, while other curlews swoop, dive, or fly short distances away, then return, all the while creating quite an uproar with their incessant, "Cur-lee? Cur-lee?" or "Pil-wil!"

The female quits brooding the chicks after two to three weeks, although the male may occasionally brood them a while longer. By the time they are a month old, they make frequent sorties away from the nesting areas. They begin to fly at the age of 41 to 45 days. Shortly after, they begin to congregate in flocks and migrate south. By mid- to late August, most long-billed curlews have left Montana.

The next time you pass through Montana's grasslands, especially where the grass is short, and near moist pastures or meadows, keep your eyes and ears open. If you're lucky, you may see this most interesting of prairie dwellers, the long-billed curlew. Tip your hat and wish him well.■

DFWP photo: George B. Kirsch

# The Emerald City of Moss

## by Paul R. Pacini

THEY always seem willing to negotiate that extra 50 yards off the trail, weaving their backpacks through the maze of fallen trees, boulders, and willows, to stand in the mist of the falls. The roar of snow melt cascading over a granite ledge, gravity dictating its transformation from a white, feathery aerial display into a firmament of boiling froth, touches a primordial string in man's heart.

As they gaze upward at the mist, they are too often oblivious to the glistening emerald city at their feet. The waterfall, although spectacular, is an inanimate circumstance of chance. But this emerald city is alive, a testament to a greater presence.

In our sophisticated, competitive, ego-centered world, we are usually impressed only by those things which are bigger, louder, faster, or more powerful than ourselves. We could, however, be just as impressed—and perhaps more deeply inspired—by many things which are smaller, quieter, and more frail in our understanding. The emerald city is a moss.

The term "moss" is often misused. The green patches of scum floating on a quiet pond are called "moss," when actually they are algae. The scaly grey, green, or orange splotches on trees or rocks are not mosses, but lichens, and the grey, hairlike "moss" hanging from trees is goat's-beard lichen.

To the botanist, a moss is a definite organism. The untrained observer most often sees moss as a thick, green mat on the ground, on a fallen tree, or on a rock. On closer inspection, the mat is comprised of individual, thick strands which, on even closer scrutiny, is made of tiny leaflets braided together.

The mosses have been on earth for something like 500 million years. But today's mosses are similar to the fossilized remains of those found in the Carboniferous rocks. Despite their primitive form and structure, the mosses have a life cycle or reproductive process which is spellbinding—mosses *reproduce*; they don't just grow! Scientists call the process "alternation of generations" because there is an alternation of the sexual and asexual (not sexual) stages.

Two individuals of different sexes are, of course, prerequisites to sexual reproduction. Each strand of the leaflet braid is an individual of a specific sex and is called a *gametophyte*.

It's a sparkling, living emerald city
under the morning dew,
Its ladies dress in emerald lace,
its men in emerald too.

The men and the ladies are almost indistinguishable. However, at the tip of each gametophyte, hidden beneath the tiny leaflets, are the microscopic reproductive structures: club-shaped and called *antheridia (antheridium*—singular) on the males, and flask-shaped and called *archegonia (archegonium*—singular) on the females.

The mosses are remnants of a group of plants which attempted to leave the water and live on land but never succeeded fully. Only when the mossy green mat is adorned with a thin film of glistening water—as from the mist of a waterfall, a heavy morning dew, or a summer shower—will the emerald city really come to life. At times like this, Mr. antheridium and each of his counterparts will release two male gametes or sperm cells. Each is equipped with a pair of whip-like propellers (cilia) which move it through the water in search of Mrs. archegonium.

A few square feet of moss mat is a big world for the microscopic sperm cells. But Mrs. archegonium is not playing hard to get. She actually secretes a sweet, alluring substance. Every sperm that senses it hastens to its source—and to the single egg cell within each archegonium. Only one of the multitude of tiny swimmers will fertilize the egg. From this fertilized egg develops a new plant of the next, or spore-bearing, generation (a *sporophyte*).

The sporophyte is not green and cannot produce its own food by photosynthesis. Its first activity is to push a bulbous foot down into the tissues of the leafy green mother plant. This provides anchorage and a means of parasitically absorbing food.

Then, suddenly, a hairlike stalk shoots up, with a capsule or spore case at its tip. The naked eye can easily see the mature sporophyte—about an inch long, and growing at the tip of its gametophyte mother.

When it is dry, a small cap falls off the spore case and the wind disperses the tiny spores within. The spores can be compared with seeds, although some explicit differences exist.

When a gardener plants a tomato seed, the seed germinates and grows into a new plant which looks like its parent plant. When a moss spore falls on suitable ground, it begins to grow, *not* into a new moss plant that resembles its parent, but into a fine thread, called a *protonema*. The protonema grows horizontally on the surface of the moist soil, branching and forming buds. Each bud will then develop into a new gametophyte plant and the multiple branching ensures that these plants occur in clumps or mats. These mats are essen-

tial because they absorb water like a sponge. When Mr. antheridium and Mrs. archegonium are ready, they can begin the cycle all over again.

The next time you pass an emerald city, take a moment to ponder the activity within. Put one knee to the ground and feel the texture of the braided, leafy stands. Lower your cheek to the earth and look for the sporophytes jutting upward like tiny brown straws above the green mat. Behold the miracle of life.■

**Most people see moss as a thick green mat on the ground. But if you look more closely, the mat is comprised of individual, thick strands. The strands are made up of tiny leaflets braided together, and each strand of the leaflet braid is of a specific sex and is called a gametophyte (above right photo: Reuben A. Diettert). To see how the gametophyte fits into the "Life Cycle of a Moss," see the chart at right. The "finished product" is a mossy mat; male and female strands of the moss *Polytrichum* are pictured immediately above (photo: Reuben A. Diettert). A hairlike stalk with a bulbous capsule at its tip—a spore and spore case—is crucial in production of clumps or mats of moss (top left DFWP photo: George B. Kirsch).**